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ORIGINAL COMMUNICATIONS.

ART. I. *On Consistency of Style as regards Windows, &c.* By W. H. LEEDS, Esq.

THERE are certain faults so self-evident, so repugnant to the principles of correct taste, and so much at variance with architectural unity, eurhythmia, and character, that, were they not of frequent occurrence, it would seem little short of impertinence to urge any caution against them. Foremost among these is the practice of introducing columns or pilasters where the windows are merely naked apertures; and, consequently, being quite out of keeping with other decorations, they become so many blemishes in what is intended to be, at all events, showy. This is the more offensive, because it very rarely happens that columns are of indispensable necessity: they are, for the most part, matters of mere taste: to employ them, therefore, where no pains are bestowed to render the other parts in accordance with them, is merely to be expensively and studiously inconsistent. It is not only a common but a most vulgar notion, to suppose that, because columns and other members of ancient architecture are beautiful in themselves, they must be viewed with pleasure under all circumstances, and in any combination. Rather are we offended, when we perceive them so applied as to be rendered no better than so much tawdry finery patched upon the homeliest stuff, dragged in for no better purpose than to convert what might have been a respectable unsophisticated building, inoffensive in its plainness, into one that is positively displeasing. Whether the windows be left thus bare, merely to curtail expense as much as possible; or because there is not sufficient room to admit of there being both dressings to the apertures and columns between them, without producing confusion by crowding them together, the practice is equally indefensible. As regards the first of these cases, it is most mistaken and perverse economy, to aim at the most ambitious kind of architectural richness, if all the rest of the building cannot be made to be of a corresponding character and style; and thus to confess either

poverty or niggardliness in the midst of unnecessary profusion. Should it, on the contrary, be owing to the other circumstance, it becomes tolerably clear that, so far from being at all desirable additions, columns should be rejected as quite unsuitable to the design; since they cannot be introduced without omitting the members essential to other parts, which correct taste requires should be more carefully finished in proportion to the decoration bestowed elsewhere. Eaton Square affords a glaring instance of this mongrel patchwork manner, for style it is impossible to call it. The Corinthian houses there have a vulgarly consequential air, that is as remote as can well be conceived from any thing dignified, classical, or chaste in architecture. Their plain sash fronts, with parasite pillars stuck up against them, may be compared to persons who have encumbered themselves with ill-assorted finery, which, when they have put it on, they know not how to wear; but, nevertheless, fancy that they must look "awfully grand," while, in fact, they only look pitiful. Among numerous other examples of the same kind that might be quoted, we here mention the front of the Post Office at Dublin, and the Commercial Buildings at Leeds, which are more lamentable instances than the houses in Eaton Square; because the latter are almost too paltry for notice, whereas something noble might have been made of the two other structures.

Akin to the preceding solecism is another which is by no means uncommon; namely, that of giving dressings to the windows of the principal floor, and leaving the others without any thing of the sort. The same design admits of various degrees of embellishment as regards windows, and the different shades of character capable of being thus produced; for harmony does not require every part to be in the same tone; yet the distinction arising from difference of degree is very opposite to that occasioned by adopting two contrary systems—namely, of ornament and nakedness. It is about as much in good taste as it would be to hang a row of unframed pictures above one in frames. In all such cases, the eye is far more offended by perceiving what is left undone, than gratified by what has been done. Many inconsistencies and blemishes of both kinds occur in Palladio's works, and in those of his school. Chiswick, so long esteemed a *chef d'œuvre* of elegance and taste, is not exempt from them; neither is Holkham. The principal front of the last-mentioned building is less complete and uniform in character than the other front; for there only the centre window in each of the wings has its proper dressings, while in those of the north front the windows of the wings are suitably decorated.

Besides these positive, and, therefore, tolerably obvious, faults, there is another prevalent error that calls for animadversion and correction, which is, that few architects bestow the pains they

ought to do in making their windows, and such other parts as do not actually belong to the order itself, sufficiently of a piece with it. Not only do the different orders, but different examples of the same order, require some corresponding degree of difference in windows, doors, and other features. Thus, what would be sufficiently embellished where the Ilissus Ionic is employed, would be very inappropriate for the more florid Athenian examples of that order. Instead, however, of attending to this sort of unity, some of our modern architects use very nearly the same forms indiscriminately for such accessory features, let the order be what it may. With many it seems to be a rule to keep everything else as subordinate as possible to the order itself; whereas the real difficulty is, not how to give consequence to the latter, but how to give adequate effect and importance to what is necessarily so much less striking.

While it cannot be denied that many of the Italian architects have erred in consequence of adopting a quite contrary system, by which windows, &c., were made the principal features, and columns mere ornamental accessories in composition; such abuse can hardly be taken as a fair argument against a discreet employment of similar resources in design. Windows may be overloaded with ornament so as to become heavy; and that, too, without being rich. It is not a multiplicity of parts that can in itself produce richness; besides which, it is necessary there should be congruity, and that the predominating character of the order should be made to manifest itself here also. Of this we have a most successful example in the portico of St. Pancras Church. The doorcases and the doors themselves correspond with the style of the columns, and serve to extend and keep up their effect throughout. Precisely the same taste, although working upon very different forms, is discoverable in one as in the other. There are no jarring dissonances to interrupt our satisfaction. It must be confessed, however, that the entablature is not treated with equal happiness; for, as neither the pediment nor the frieze has any enrichment, more depth and ornament are required in the cornice, in order to balance the effect of the columns, and lessen in some degree that disparity now occasioned by the transition from copiousness to comparative meagreness of decoration. Nor is the deficiency here at all lessened by observing that the mouldings of the antæ caps are continued along the walls at the sides of the building, whereby the upper part of the elevation becomes comparatively richer than in front, where, since the entablature could receive no such increase, some addition, in the way of embellishment, ought to have been thrown in.

The doors within the portico of St. Martin's Church furnish an example altogether the reverse of the preceding. They are mean and insignificant as regards the proportions of the portico itself;

and, instead of the centre one being made more conspicuous and commanding than the other two, it appears depressed in comparison with them, because the spring of its arch is lower than their horizontal architraves. Neither can any thing well be imagined more uncouth in themselves, or less suitable to the order here employed, than the forms and details both of the doors and windows; and if an architect does not show any purity of taste or nobleness of ideas in parts where he is left more to himself, than in columns and entablatures, which are seldom other than avowed copies, whatever merit there may be in the latter when taken by themselves, he has but a sorry claim to commendation; since the praise bestowed amounts to no more than an acknowledgment, that the deformities he has added of his own do not altogether prevent our feeling the beauty of what he has only borrowed. The attention of architectural students is by far too exclusively directed to the orders alone; whereas, were more study bestowed upon windows and other parts, which certainly allow greater scope for inventive design, more varied and original effect of detail and ornament might be obtained than we generally meet with at present.

London, February, 1835.

ART. II. *Remarks on Forsyth's Architectural Opinions.* By CANDIDUS.

THE tone of my last communication (p. 140.), that part of it at least which expressed some disapprobation of Forsyth, may probably have been too harsh; my censure too daring. Few, it must be admitted, care to insinuate anything against a work that has successfully passed its ordeal with the public; which has gone through several editions, and taken its rank as a standard book of the best authority, on the matters it treats of. Is it to be borne that an anonymous writer should fling his censure at an established reputation? So many will exclaim. To which my reply is, that the anonymousness on the one side, and the celebrity on the other, ought to be left entirely out of the question, as having nothing whatever to do with the merits of the argument either way. That celebrity, too, must be of most flimsy and cobweb texture, which cannot bear a little handling and examination; and is but ill calculated to endure the wear and tear that time occasions to reputation and celebrity in general. By no means do I intend to say that Forsyth's is not, in many respects, a very clever work, and an amusing one withal; yet I certainly do think that his critical opinions are to be received with great caution; otherwise, instead of instructing, they will be apt to mislead, and that, too, on many important points.

Unquestionably it is a convenient thing to be able to get at ready-made opinions, especially if smartly and pithily expressed. They save most folks a great trouble; and "Forsyth says so and so," silences all opposition. I myself, however, am one of those headstrong beings who are not satisfied without reasons, and reasons are what Forsyth rarely offers in support of what, consequently, may be termed his likings or dislikings. Of peremptory dicta he gives us enow, and many of them seem to be any thing rather than conclusions drawn from deliberate examination and philosophical criticism.

Merely to say all this would be unjust, unless supported by something like proof; I, therefore, proceed to notice a few, and only a few, of what I conceive to be hasty and erroneous decisions. He despatches his notice of the Ducal Palace at Venice in the following strain: — "It is in a style that may be arabesque, if you will, but it reverses the principles of all other architecture; for here the solid rests on the open; a wall of enormous mass rests on a slender fretwork of shafts, arches, and intersected circles. The very corners are cut to admit a thin spiral column; a barbarism which I saw imitated in several old palaces. A front thus bisected into thick and thin" (an odd expression, by the by), "such contrast of flat and fretted, can please only in perspective. It is not enough that the structure should be really durable, it should also appear so." This certainly looks plausible; and we must also admit that the writer brings forward more reasons than he is generally wont to do; yet, after all, it amounts to little more than telling us that the building does not accord with ordinary rules. The very contrast that he censures is the very quality that renders it so striking, not only to the eye, but to the imagination; and it surely was incumbent upon a philosophical critic to endeavour to account, if possible, for the singular fascination which charms us in a structure wherein there is so much that is utterly opposed to architectural doctrine. And that it has no little fascination for artists, at least, may be taken for granted, since they appear to have devoted themselves almost exclusively to this single edifice at Venice. Mr. Forsyth very plainly intimates that the building does not *appear* sufficiently strong, the lower part consisting of two tiers of open arches, above which arises a nearly solid mass. To a person unacquainted with the properties of the arch, such may *appear* to be the case; yet hardly so to any one who understands them, and whose judgment must, consequently, convince him that these arches are fully adequate to the purpose for which they are employed. It would be quite as correct to condemn the bridge of the Rialto, because its slender wide-spanned arch seems inadequate to support the mass of structure which encumbers the upper part of the bridge; or to argue that the

pendants in the vaulted roof of Henry the Seventh's Chapel are monstrous deformities, because they *appear* as if they would fall down and crush us. Unquestionably the same arrangement of solids and voids as that in the Venetian edifice would be intolerable in one where the columns supported horizontal entablatures, although it should not pretend to approximate in the least to the Grecian style. Double the number of columns above to what there are below would, of itself, be a preposterous extravagance; while here it becomes rather a merit, by throwing more play, variety, and lightness into the *ensemble*. A piece of architecture may have several individual blemishes, and yet may be admirable as a whole; while another may have not a few individual beauties, and nevertheless be sadly deficient or insipid taken as a composition. As here introduced, it is the contrast of "*thick and thin*," of "flat and fretted," that imparts such an undefinable charm, and so much expression and picturesque character, to the exterior of the Ducal Palace.

That at any rate I do not stand altogether alone in the opinion I entertain, is sufficiently apparent from what Legrand, himself an architect and a tolerably competent judge, says in regard to this building. I quote his own words, lest I should injure their force by attempting to translate them. "Son effet imposant prouve, contre l'autorité de ces règles asservissantes, qu'il y a plus d'un genre de beautés dans l'architecture, et qu'il suffit à homme de talent de prendre un parti, de le soutenir avec hardiesse, et de placer les détails toujours en harmonie avec les masses, pour faire éprouver d'agréables sensations à tous ceux qui savent apprécier les productions des arts. Quoi de plus contraire, en effet, à toutes les loix de l'architecture, et à ces grands raisonnements *qui prouvent tout à ceux qui veulent bien s'en contenter, et ne prouvent rien à qui n'en a pas besoin pour reconnâitre le beau partout où il se trouve*,—quoi, je dis, de plus contraire aux règles que des arcades percées dans toute l'étendue d'une façade, soutenant une frèle galerie en petites colonnes surmontées par des arcs aigus, qui découpent encore des rosaces, le tout couronné par un mur plein, seulement percé de sept grandes croisées, qui se trouvent tantôt à plomb d'une des arcades de bas, et tantôt à plomb de la colonne!"

Here, instead of being shocked at the deviation from rules, Legrand considers this building as affording a proof that there are beauties lying out of the usual track of the art; not, indeed, to be rashly and indiscriminately ventured upon, nor to be recommended as things that may safely be copied by any one, yet productive of great effect in the hands of a master.

Compared with the liberal and generous spirit of criticism manifested by Legrand, that of Forsyth too much resembles the plodding routine doctrine of a "five orders" man, who is

entirely swayed by the letter of certain precepts, good in themselves, yet occasionally admitting exceptions under peculiar circumstances. Forsyth does not even feel (or, if he felt, he has not acknowledged it) the picturesque power, the forcible impression the building makes upon every beholder who is not bigoted by narrow prejudices. He seems not to have recognised in it any poetic quality, which, if architecture is at all worthy of being classed with the other fine arts, is assuredly the one that bestows on it its best founded claim to such rank.

If we may judge from what he has said in regard to chimneys, Forsyth was of opinion that they should not be suffered to appear externally. Speaking of those of some of the palaces at Venice, he contends that they "figure more conspicuously than so sordid an object should do, in imitation of obelisks, bells, and candelabra reversed." Now he does not object to them as being not sufficiently ornamental, nor exactly upon the grounds of bad taste being shown in their decoration and the forms selected for that purpose; but, forsooth, because they are rendered more conspicuous than is becoming so "*sordid*" an object. A stranger notion than this is not often to be met with. If chimneys are rendered elegant features (that they are indispensable ones, and must either be shown or masked, is evident enough) I should like to know how they can, with any propriety, be termed sordid objects? We have but to adopt this reasoning to its fullest extent, or even consistently, and we should forthwith banish chimney-pieces from our apartments, and leave only naked fireplaces; for why should we allow such "sordid objects," the backs of which are befouled with soot and blacks, to "figure so conspicuously" in elegantly furnished rooms? Most certainly the architects of Thornbury and East Basham, those rich specimens of our ancient *vernacular* domestic architecture, entertained very different ideas on this point from Mr. Forsyth; neither would Vanbrugh have acquiesced in his theory. It is true they did not deal in critical dogmas; nevertheless their judgment seems to have been quite as good as that of our modern critic and traveller. Diametrically opposite to Mr. Forsyth's, too, is the opinion of another traveller:—"In Italy," says Williams, "more variety and taste are occasionally displayed in the chimneys than in the buildings to which they belong. These chimneys are as peculiar and characteristic as palm trees in a classical climate, and impress us strongly with the idea of distance from home. In Calabria and other parts of Italy, and in the Ionian Islands, we were frequently struck with the consequence which the beauty of the chimneys imparted to the whole building." (*Travels in Greece and Italy.*) In fact, so far from attempting to screen chimneys, even where it can be done effectually, it would be more advisable to avail ourselves of them for ornament, and

in order to break the formality of straight lines in a roof. Neither can it be doubted that such features may be made perfectly to accord with the rest, let the style of the building be what it may, since we have only to select for our purpose such forms and enrichments as the style itself naturally suggests.

Much might be said on the subject of Forsyth's predilection for Palladio, upon whom he bestows unqualified admiration, without even so much as hinting at a single defect. "His palaces here (at Vicenza)," he exclaims, "even those which remain unfinished, display a taste chastened by the study of ancient art. Their beauty originates in the design, and is never superinduced by ornament. Their elevations enchant you, not by their length and altitude, nor by the materials and sculpture, but by the consummate felicity of their proportions, by the harmonious distribution of solid and void, by that happy something between flat and prominent which charms both in front and profile; by that *maestria* which calls in columns, not to encumber but to support, and reproduces ancient beauty in combinations unknown to the ancients themselves." !

To me the whole of this effusion is so passing strange, so utterly irreconcilable with what is shown in the buildings themselves, that, were it possible to do so, I should conceive the writer to have been deliberately hoaxing his readers. Instead of displaying any thing like "a taste chastened by the study of ancient art," the Vicentine architect's designs, for the most part, exhibit quite the reverse. Columns stilted upon pedestals sometimes half the height of the columns themselves; broken entablatures; pulvinated friezes, and friezes perforated with naked openings for windows; windows cutting into architraves; enormous pediments; angular and curved pediments to windows, occasionally loaded with figures; attic windows sometimes wider than those below them, and generally too deep for the attic itself; decorated and plain windows in the same front; windows in pediments; ugly balusters; heavy mouldings, seldom enriched, although a deal of fantastic ornament is lavished elsewhere; preposterously wide intercolumns; meagre Ionic capitals and spindle shafts in that order; a centre window sometimes lower than others on the same floor, with a small square one above; and heavy sprawling festoons, as if to atone for the excessive plainness of the order itself:—these are some of Palladio's many vices, although Mr. Forsyth seems to have considered them beauties; and, if you take away these, you would frequently take away the whole design, and leave nothing but the bare wall and its apertures. Particularly unfortunate is he when he asserts that Palladio "calls in columns, not to encumber, but to support;" because we rarely find them introduced at all, except as mere decoration in the shape of half-columns stuck against the wall,

and supporting nothing but lumps of the entablature projecting above them. How ironical, too, sounds the compliment, when he assures us that the beauty of his buildings "originates in the design, and is never superinduced by ornament!" Most assuredly little *beauty* is so superinduced; yet we often find that his ornament superinduces a great deal of deformity that might as well have been spared. In one example, of which my memory does not at the instant supply me with the name, Palladio has introduced a large order the height of two floors, except just at the angles, where he has substituted a small pilaster the height of the first floor, and has surmounted it by a preposterously large figure to fill up the remaining space; so that, instead of appearing, as they ought to do, more solid than the rest, the extremities of the front become absolutely "gimcrack" work, without the slightest degree of beauty to reconcile us to the impropriety itself.

I know very well that Algarotti extols the front of Palladio's own house at Vicenza as something quite superlative of its kind; and I also know that both Forsyth and Mr. Beckford express themselves quite ecstatically in regard to the Teatro Olimpico; yet, whatever weight their opinions may have with the public, they do not at all influence mine, but merely serve to convince me, that when people have a name they may talk a good deal of nonsense with perfect impunity. The front of the first-mentioned building is not at all in better, if, indeed, in so good, taste as those of some of the new London gin shops; and the other is about as ugly an imitation of an ancient theatre as could well be contrived. Even Robert Adam, who was by no means too pure and correct in his own designs, condemns it *in toto*, and censures the decorations of the "scene" as being a compilation of architectural monstrosities.

It is now high time to get rid of all the commonplace traditional cant about Palladio, and to look at his works, not through the telescope of his reputation, or any other falsifying medium, but with our own unprejudiced eyes. I will venture to affirm, that ninety persons out of a hundred judge of him entirely by rote and by book; and that, were they to see any of his buildings or designs, without knowing who was the architect, they would hardly discover a single beauty.

I shall not pursue Mr. Forsyth any farther, at least not at present, but allow the reader to ruminate upon the specimens of that writer's critical taste which I have here produced. Very far, however, am I from wishing to dogmatise, and thrust my opinions upon other people against their own conviction. Should any one, therefore, think it worth while to refute what I have said, he has but to come forward with his pen; nor will I be the last to exclaim, "Audi alteram partem."

London, Feb. 1835.

ART. III. *Thoughts on the Origin, Excellencies, and Defects of the Grecian and Gothic Styles of Architecture.* By the late Dr. JAMES ANDERSON.

(*Continued from* p. 111.)

GOTHIC Architecture. — It has been already observed, that internal decoration, or the accommodation of private individuals, formed no part of the system of architecture invented by the Greeks; nor did the Romans, except in a very slight degree, attempt to supply that deficiency. They did, however, attempt it; and in this, as in every other attempt which they made toward improvement in matters of taste, they proceeded in an awkward and bungling manner. When individuals at Rome acquired great wealth by robbing the distant provinces, and other measures of a similar kind; toward that period, when luxury with such rapid strides paved the way for the downfall of the empire, large apartments were sometimes necessary for the accommodation of the numerous guests who were assembled together to participate in the sumptuous entertainments of the affluent. We cannot now correctly trace by what devices they were enabled gradually to increase the size of these apartments till they reached their fullest perfection in this respect; but, by the writings of Vitruvius and others, we are made perfectly acquainted with the form and internal decoration of those apartments which were reckoned to excel all others in elegance and grandeur, when the Roman empire had reached the zenith of its wealth and power. These apartments Vitruvius has accurately described and delineated under the denomination of *Egyptian halls* (probably because the first apartment of that kind had been erected by Mark Antony, in Egypt, for the sake of Cleopatra, of whom he was so deeply enamoured): but, wherever this kind of saloon was first built, or by whom invented, it is evidently nothing more than an awkward attempt to introduce the Grecian colonnade into the inside of an apartment, in which situation it loses all its original beauty and utility, and has the inconveniencies to which it was subjected without doors greatly augmented. Yet even this innovation, because of its novelty, and the superior size and splendour of such saloons, when compared with those which had been formerly in use, was applauded at the time as a most sublime improvement in the art, and must, of course, be accounted superlatively elegant by all the *cognoscenti* of our days. Even in our own time, and long after many models of internal structures, infinitely more perfect in their kind, had been invented and exhibited in every country of Europe, the infatuation of which I complain was so strong as to blindfold a man of the first eminence in this kingdom for taste and many other acquirements to such a degree, as to make him believe that no other mode of internal arrangement which had ever been devised could, in any degree, be compared with this in respect to elegance and grandeur. The Earl of Burlington, so well known for his taste and architectural acquirements, actually conceived the idea of building an assembly room at York on that model, and had influence enough to get it erected and finished to his own taste, according to the original design furnished by himself. The room, when finished, obtained, as was to be expected, the most unequivocal approbation of every *connoisseur*, and has been held out to the public by them ever since it was erected as an unexceptionable model of the chastest style of elegant Grecian architecture. The *people* praised it, as they must needs do, or be accounted destitute alike of knowledge and of taste; but every one in his heart thought it was a dull and heavy building. In course of time one person ventured to whisper to another in private his sentiments concerning it; and they soon found that others had felt as they had done. It was, however, tolerated for many years, more on account of the expense it had cost, and the difficulty of finding another in its stead, than from any other consideration. But at last the disgust to it became so universal and so strong, that it could be no longer

endured; and, notwithstanding the expense that must in consequence be thus incurred, it was at last abandoned, as I have been assured, and another room erected in its stead that was thought to be much better suited to the purposes for which it had been originally intended.

What other improvements or alterations the Romans might have made in this respect, had the power of their empire been continued for a sufficient length of time, it is impossible to say. Their progress in the fine arts was here suddenly arrested by the irruption of those savage tribes from the north of Europe who conquered their distant provinces one after the other; and at length, after a struggle of many centuries, overturned the empire itself, and buried in one indiscriminate ruin the finest productions of art, together with the persons who were capable of executing them. It is impossible to trace the subsequent progress, in the domestic arts, of a barbarous people, who, for many ages, seemed to delight in nothing so much as in obliterating every mark of human civilisation, even to the art of writing itself, which could only, perhaps, have tended to record their own shame. Ignorance and impenetrable darkness universally prevailed; that kind of darkness which was only rendered visible by the accidental explosion of deeds of horror, which, like the smothered volcano, sometimes bursts forth, and exposes to view, for a moment, the devastation which it scatters to all around it.

Yet amidst this accumulated ruin the Christian religion survived. The sublime purity of its doctrines astonished these brutal ravagers to such a degree, as to produce a kind of veneration in their untutored minds that could scarcely be deemed short of idolatry itself. Every thing connected with that religion came to be by them accounted sacred. Its ministers thus acquired a power over the human mind that was unequalled at any former period of time; to preserve which, no art that a fertile imagination could suggest was omitted. Pompous processions of venerable men clothed in gorgeous robes, were not among the least imposing of the means adopted for that end; and superb temples adorned with every thing that could give an idea of supereminent wealth and power were, with the same view, considered as objects so very desirable, that they could not be purchased at too great a price. In this way architecture was the first of the fine arts that came to be studied among this ignorant people: but by what steps it was gradually revived, and in what manner it advanced in those dark ages, we may conjecture, but shall probably never be able clearly to discover; all we know with certainty is, that many churches of large dimensions were erected of *wood*, long before the era of any certain records in Europe; and that the frequent destruction of these churches by fire, during the uninterrupted warfare that was carried on between hostile tribes, produced a universal, and, we need not doubt, a most earnest desire to see if it were possible to get others reared of stone, that should be, in all respects, suitable to the high ideas of awful superiority which they wished to impress upon the minds of the people, concerning every thing that was connected with sacred things. As the clergy had in those days all the power, and consequently the command of all the wealth, of Europe, they were enabled to hold forth strong allurements to those who should best exert their talents for the purpose of carrying into effect these objects of their warmest wishes.

Strong allurements will never be long held out in vain to man for the purpose of exciting his powers, whether of body or of mind: nor could we perhaps produce a better illustration of this axiom than the instance before us affords. We know not the steps by which these artists raised themselves to such an exalted eminence above the general mass of ignorance that surrounded them; nor have we any other way of forming a judgment of their ultimate acquirements, than by an exact analysis of the works they have left behind. We are only free to conjecture that it was at this period, and for the purpose of perfecting themselves in this much cherished art, that some of the persons who had made the greatest progress in these studies associated themselves together for the purpose of reciprocally communicating the particulars

which they had separately been able to acquire, that thus the general mass of knowledge might be the more speedily augmented. And as knowledge of this kind was, to each of these individuals, the undoubted power of acquiring wealth, it was natural for them to bind each other, under the most sacred ties they could invent, not to divulge to any one out of the society the secrets they should thus attain. In order that this kind of communication should not be interrupted, and that every one might be at liberty to pursue his studies by himself in the manner best suited to his talents, situation, and circumstances, but so as still to divulge to the society the whole of the discoveries he should make, care would be taken to appoint meetings at stated and convenient times, for the purpose of communicating all useful information to each other; and, as talents are not confined to one language or people, but are distributed by the Giver of all good with nearly an equal liberality among all nations; and as all people then worshipped the same God according to a ritual universally adopted, these men, whose sole object was to erect temples to the universal Father of all mankind, considering the whole of the human race as brethren, readily admitted every individual into their society who professed himself determined to apply his whole powers towards the perfecting of that great object which they had all so much at heart. Thus it happened, by one of those arrangements of nature which we sometimes call strange fatalities, that, in an age when anarchy universally prevailed, and inveterate warfare and bloody strife pervaded all nations, was formed an institution whose basis was universal kindness and brotherly love.

Such I conceive to have been the origin and primary object of that institution, the shadow of which has been transmitted even to our days (long after the soul and spirit of it had evaporated), under the name of the fraternity of *free-masons*, concerning the present state of which fraternity so much has been written of late.

Whatever may be the uses or the abuses of that fraternity in our day, we can scarcely form an idea of a plan that in the then state of the universe could have been so well calculated as that was for effecting the purpose intended. Books were not to be had, so that no information was to be derived from that source; and meetings in public for the purpose of freely discussing these subjects, as under the porticoes of Athens, while they would have alarmed the clergy, ever jealous of preserving the impression of their superior abilities among the people, would at the same time have rendered common to all, that knowledge of which they wished exclusively to make profit. Neither would it have been possible for any deep investigation to have been pursued so far as was necessary, in a public manner, among a multitude of men immersed in total ignorance. By the plan they adopted, each of these difficulties was clearly avoided: in consequence of the universal correspondence that was thus established among all nations, they concentrated within a narrow sphere the whole of the knowledge belonging to the fraternity, where, like the solar rays collected in the focus of a burning-glass, the effects were vivid and powerful. No knowledge that was thus once obtained could ever be lost; and while they were advancing with the ardour which energetic minds must ever feel while they have the prospect of effecting astonishing things, the tongues of the weaker brothers were tied up from babbling. Thus they went on for ages in a silent but uninterrupted progression, as takes place universally in the irresistible operations of nature; and the wonders of their power were only to be appreciated by its effects after it had been exerted.

We have undeniable evidence that the first exertions of these enterprising artists, like those of ancient Greece, were employed in constructing edifices of wood; but we are nearly as much in the dark respecting their first rude attempts, and the steps by which they gradually reached that degree of perfection they at last attained in this particular, as we are respecting most of the other discoveries in the useful arts that were made in the early periods of society. We only know for certain, that they attained at length the power of rearing spacious structures of vast extent, which afforded abundance of light

and every other convenience that their rites of worship required; and exhibited a display of internal magnificence that left all the works of antiquity in that line at an amazing distance. What the particular devices were by which they found themselves enabled to effect these things, we can at best do no more than form some probable conjectures. But from the few specimens of wooden roofs that remain, which were constructed by artists during those dark ages which we very unjustly, in this respect at least, style barbarous, we shall be obliged to conclude that they must all have been constructed upon the soundest mathematical principles well understood, as applied to materials possessing the qualities and powers of those upon which they operated. The fine roof of Westminster Hall, and that still finer one of the Parliament House in Edinburgh, afford sufficient evidence of this. Whenever these shall be examined by a man who shall have made such a progress in that science which must have directed the hand of the artist who constructed them, as to enable him to appreciate their merits, he will find that the term *barbarous*, which he was prepared to adopt as applied to them, will be arrested before it reaches the lips, and that of *wonderful* forced out in its stead. Wonderful, indeed, such operations may be deemed, when they are compared with any thing else respecting the state of science or of arts, that occurred at the period of time when these roofs were constructed: nor will he be inclined to withdraw the word, when they shall be compared with any work that required the same kind of knowledge of the principles and power of the materials, that has been executed in wood by any of the artists in Britain, even after we have made all those improvements in science that constitute the pride and the boast of the present age.

When at last the concurring voices of all the people in every nation in Europe coincided in calling upon these artists to endeavour to erect structures in stone that should admit of every convenience, without losing any part of the elegance possessed by those to which the people had now, for so long a time, been habituated, and, of course, accustomed to admire, their attention would of necessity be strongly attracted to the subject; and the nature and properties of the substance they were about to work upon must have been an object of long and very deep investigation, before they could dare venture to form an idea of the possibility of effecting a thing so seemingly beyond the reach of any human powers. That they investigated this subject upon the soundest principles of mathematics, we can have no doubt; not only from this consideration, that a set of men, who had been governed in all their operations upon wood by mathematical principles, would naturally apply the same principles in directing them how to employ any other materials for the purpose of erecting similar structures; but still more must we be convinced of this truth, from a careful analysis of the structures erected by these men, which still subsist in our day; and which, we shall find, when thus analysed, exhibit the most undeniable proofs of such a consummate degree of knowledge of those principles that were necessary to give stability to their works in every situation, as gave the artists a power to perform whatever they wished to effect, by devices of the simplest kind that the nature of the case could possibly admit. It is in this deep knowledge of the scientific principles of masonry, that we are to seek for the origin of those forms which peculiarly characterise that mode of building which has obtained the name of Gothic, and not in the capricious whims of a disordered imagination; nor in those fantastical analogies which it has been but too much the fashion among ignorant men, who have pretended to decide on this subject, to hold up to public view with scorn and derision, as the only circumstances which had influenced the conduct of these much injured, though never enough to be admired, nameless, humble, and self-taught artists.

When these men came to reflect seriously upon the subject, the first circumstance that must present itself to them would be, the impossibility of forming a roof of stone of such ample dimensions as those which they had acquired the power of constructing of wood. If they should attempt to support it by means of pillars of stone after the manner that had been practised

in those few models of Grecian or of Roman architecture which had been preserved till their time, they would at the first glance perceive, that the area would have been so much crowded with massive pillars as to have buried the centre in the most dismal gloom, and not to have admitted of a successful display of that splendour at which they aimed: nor could space have been obtained for the exhibition of that grandeur which constituted such a striking part of the rites of the church. Every idea of that mode of construction must have been, upon these considerations, entirely laid aside from the moment it obtained a serious investigation, as being in all respects incapable of answering the purpose intended.

The first idea that, under these circumstances, would present itself to the mind of the artists as an improvement, if they could devise a method of doing it, would be, that of diminishing the number of the pillars required for supporting the roof; but how this could be effected, must have appeared, to men who had never practised the art of building in stone, a matter of the most serious difficulty. In studying the remains of those few ancient buildings of stone which had withstood the ravages of time, and which, from the moment our artists had conceived the idea of attempting to rear structures of similar materials, must have been examined with the most minute degree of attention, it would not be long before they would remark, that there was a possibility of closing an aperture in a wall by means of an arch thrown over it, although the distance between the two sides of it was too great to admit of a single stone being found that could reach over it. It is but going one step farther to say, might it not be possible to connect the columns together by means of arches, instead of the solid architrave of the Greeks? To solve this question, they must study, in some measure, the nature of an arch, and the principles upon which its stability depends. They had now got possession of the clue that was to guide them through the intricate labyrinth in which they had been wandering so long, without a glimmering of hope that they could ever get out of it.

They would thus be able, in a short time, to perceive, that if a row of arches of the same size and form were to be made at moderate distances from each other in the same wall, the solid pillars from which these arches sprang, by being loaded with an equal weight on each side, would thus have a tendency to be pressed directly downwards only, and not to be pushed in the smallest degree to one side or the other; so that, if the stones of which these pillars consisted were true and fairly bedded, there could be little danger that such pillars would be deranged by the weight that was laid upon them. Here, then, was one great step gained, which would encourage them to proceed with their enquiries.

If a row of pillars connected by arches can be thus built in one direction, why may not a wall which intersects this wall (now consisting of arches and pillars) at right angles be constructed on the same principle as the former? It is evident, that this last wall cannot be affected by the first named in the slightest degree, except at the precise point of intersection; and if that point of intersection be one of the pillars, and the thickness of the wall be the same as the width of the pillar, this intersection can have no other effect upon this square pillar than merely to add double the weight that it had before to support; for it will be now equally balanced on both sides, from south to north, as it formerly was from east to west, so that it must stand equally firm as before, if the materials of which it consists be so firm as not to be in danger of being crushed together by the pressure.

Here, then, we have a distinct view of the steps of that process by which our artists acquired the original idea of placing their columns at a much greater distance from each other than the artists of Greece or Rome could ever accomplish, and of joining them together by means of arches for supporting the roof. It is this particular that constitutes the characteristic feature of the Gothic architecture, and discriminates it from that of Greece and Rome: nor shall we find any difficulty in tracing, in the future numbers of our work, with equal precision, the origin and uses of all those lesser de-

vices which were afterwards adopted as natural and necessary modifications of this grand principle, as it came to be applied to the particular purposes it became necessary to effect, which have been so much misunderstood, and so often made the butt of a senseless ridicule, by ignorant witlings in modern times.

Art. IV. *A Design for a Turnpike Lodge, with Remarks.* By Tyro.

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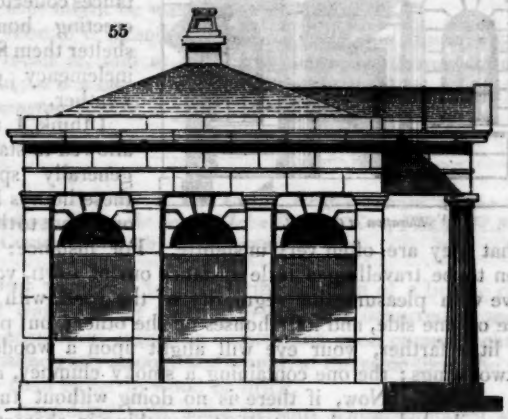

Geometrical Elevation of the Side Front.

Among the various subjects enumerated intended to be treated on in the *Architectural Magazine*, I find that of Road-making. Of late years, great attention has been paid to the formation and improvement of our roads, and, I have no doubt, before long,

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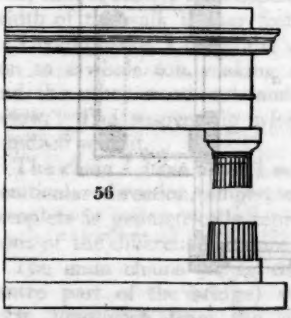

Details of the Portico.

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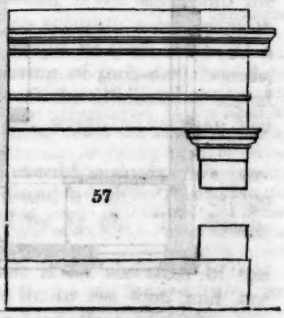

Details of the Side Front.

if that attention be continued, we shall have roads to be proud of. The only means we have of keeping them in good

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Elevation of the Front.

condition, is by levying a tax upon the various conveyances which traverse them, and the method of raising this tax is, as we all know, that of placing at certain distances collectors, and erecting houses to shelter them from the inclemency of the weather.

I think I may be allowed to state, that generally speaking, these houses form no ornament to the road, and that they are often very unsightly. For instance: f you happen to be travelling a little distance out of town, you may observe with pleasure the regularity of the road, with a neat terrace on one side, and lofty houses on the other; but proceeding a little farther, your eye will alight upon a wooden box with two wings; the one containing a smoky chimney, and the other a privy. Now, if there is no doing without turnpikes and turnpike lodges, why not erect something in character with

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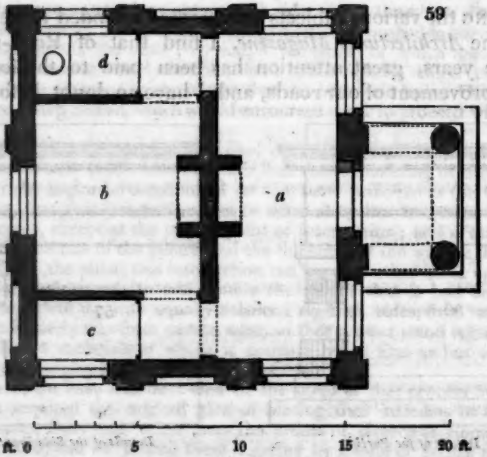


the houses on each side, and not such eyesores as at present disfigure the road? In order to accomplish this, I have en-

deavoured to set an example through your Magazine, by subjoining a plan, elevations, and details, which, in my opinion, would be better adapted to the purpose, and would be of very little more expense.

Fig. 59. is a plan for a turnpike house or lodge. The room *a* is 15 ft. 6 in. by 6 ft.; one side to be used for depositing the money and keeping the tickets; and on the other side there being room for a chair or two, for the accommodation of any person that might be waiting for the stages.

The room *b* is intended, in the daytime, for the collector to eat his meals in, and at night as a bedroom, having a turn up bedstead; *c* is a closet; *d*, a watercloset.

Wilmington Square, Sept. 2. 1834.

ART. V. *An Account of the Chain Bridge erected at the Hyde, Ingatestone, Essex, the Seat of John Disney, Esq., F.R.S. H.S. Z.S., &c.* Communicated by Mr. DISNEY.

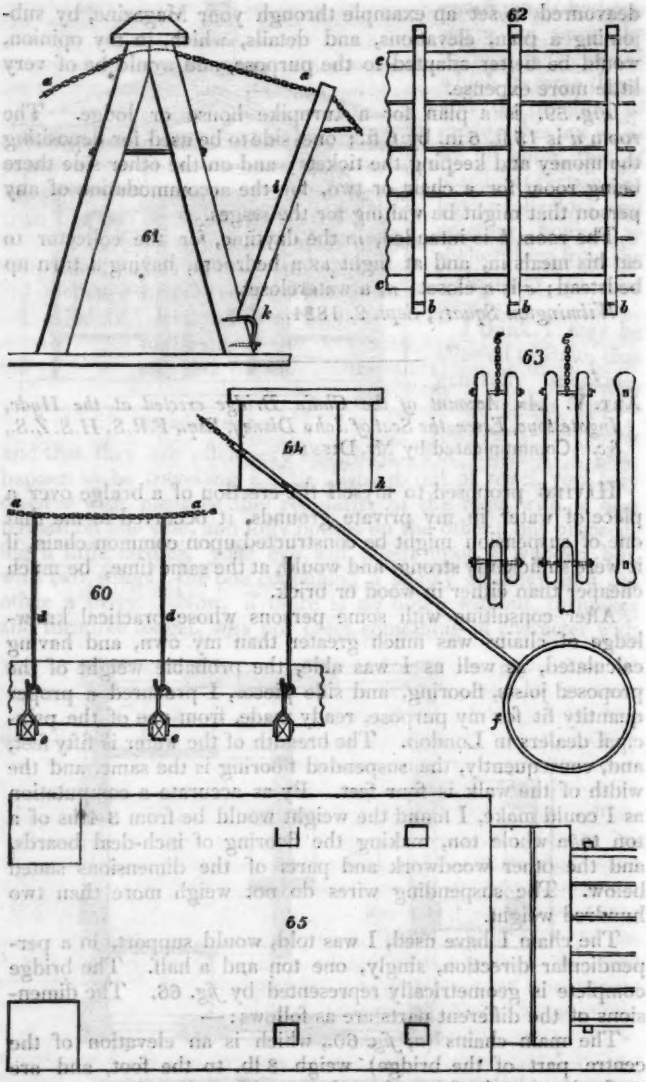
HAVING proposed to myself the erection of a bridge over a piece of water in my private grounds, it occurred to me that one of suspension might be constructed upon common chain, if it were sufficiently strong, and would, at the same time, be much cheaper than either in wood or brick.

After consulting with some persons whose practical knowledge of chains was much greater than my own, and having calculated, as well as I was able, the probable weight of the proposed joists, flooring, and side pieces, I procured a proper quantity fit for my purpose, ready made, from one of the principal dealers in London. The breadth of the water is fifty feet, and, consequently, the suspended flooring is the same, and the width of the walk is four feet. By as accurate a computation as I could make, I found the weight would be from 3 4ths of a ton to a whole ton, making the flooring of inch-deal boards, and the other woodwork and parts of the dimensions stated below. The suspending wires do not weigh more than two hundred weight.

The chain I have used, I was told, would support, in a perpendicular direction, singly, one ton and a half. The bridge complete is geometrically represented by *fig.* 66. The dimensions of the different parts are as follows:—

The main chains (*a*, *fig.* 60., which is an elevation of the centre part of the bridge) weigh 3 lb. to the foot, and are 75 ft. long each from the places where they join the anchorage.

The joists (*b*, *fig.* 62), are of heart of oak, 4 ft. 6 in. long,



and in substance three inches by two, bearing the weight edgewise. In the under side of these, two inches from each end, is a notch for the purpose of receiving a stirrup (in order to

keep it in its place), in which they rest. These joists are fifteen inches apart.

The side pieces are at *c*, *fig.* 62., which exhibits the soffit of the bridge.—The joists being placed in their stirrups, there are laid over them, and just within them, four pieces of deal, 3 in. by 4½ in. in substance, and 12 ft. long each, having notches cut in the lower edges, at equal distances of 15 in. to receive the joist, which are made fast to them by a screw passing downward into the joist: these I have called side pieces, and their use is to keep the joists in their places, and steady.

The suspension wires (*d*, *fig.* 60.). — The chains being properly placed and secured, iron wires, 3 8ths of an inch in diameter, of proper length, having a hook turned at each end, after the manner of S hooks, were put on: one end of each wire is hung upon a link of the chain, and on the other is hung the stirrup.

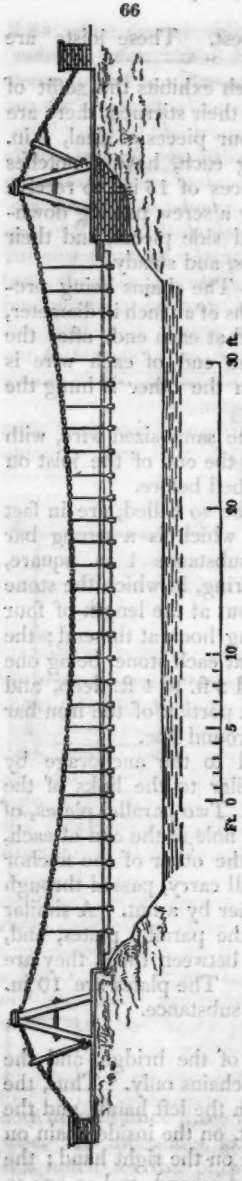
The stirrup (*e*, *fig.* 60.) is made of the same-sized wire, with a loop or hook at the top, and receives the end of the joist on its flat side, falling into the notch described before.

The anchors (*f*, *fig.* 64.), if they may be so called, are in fact old garden-roller stones, round each of which is a strong bar of iron, 17 in. in diameter, and in substance 1 in. square, welded again to itself, so as to form a ring, in which the stone lies horizontally. This bar is brought out at the length of four or five feet, and turned into a very strong hook at the end; the stone with the hoops (for there are two at each stone, being one for each chain) are buried in the ground 3 ft. to 4 ft. deep, and rammed in, presenting above ground a portion of the iron bar and the hook. In this figure *h* is the ground line.

The chains (*g*, *fig.* 63.) are fastened to the anchorage by means of plates of iron, somewhat similar to the links of the chains in the large suspension bridges. Two parallel plates, of similar shapes and equal lengths, with a hole at the end of each, are placed one on one side and one on the other of the anchor hook, and a bolt as large as the hook will carry, passed through the three, which are screwed close together by a nut. A similar bolt is run through the other ends of the parallel plates, and, the last link of the chain being placed between them, they are screwed together in the same manner. The plates are 10 in. long, and 1 in. by 5 8ths of an inch in substance.

Fig. 65. is a plan of the bridge.

There are two chains on each side of the bridge, and the joists are hung alternately, each on two chains only. Thus, the first joist hangs on the outside chain on the left hand, and the inside chain on the right hand; the next, on the inside chain on the left hand, and on the outside chain on the right hand; the third hangs as the first, the fourth as the second, and so on; so



that each chain supports half the weight of one side of the bridge, and, consequently, one fourth of the whole. The piers (*fig.* 61.), over which the chains pass, are of wood, heart of oak, 5 in. by 6 in. in substance, and set into the ground 2½ ft. They are put with their tops leaning together, at such an angle as to make the base of the triangle half its perpendicular height; they are braced together under ground, and bolted together at 3½ ft. from the surface of the land, and also, again, immediately below where they meet. A movable stone cap protects them and the groove in which the chains lie, from wet.

They have been now in use nearly two years, and have not varied from their original position the eighth part of an inch, as appears from a mark with a chisel, made when they were first put up.

When the bridge was first erected, the chains were brought in a *direct line* from the top of the piers to the anchor-hooks. But, then, the angles formed by the descending chains on each side of the piers, with the perpendicular axis of the triangle, were not equal, and the pressure was necessarily thrown more upon the inner post than the other. To have corrected this by lengthening the chains would have made them inconveniently long. I therefore took the bridge off the chains, and placed an oaken stay (*i*, *fig.* 61.), resting its lower end on a strong iron bracket (*k*, *fig.* 61.), at the foot of the outer post, and put it in a direction parallel to the inner post, making its length just sufficient to raise the chain to an angle, externally, equal to the inner one. At the same time, finding that the vibration of the bridge was very considerable, owing to the length of the suspended flooring (which is exactly fifty feet), and its great light-

ness, I put an additional stay on each side, in one piece, 48 ft. long, over the other four side pieces, and bolted them together; which has had the effect of stiffening it, without adding much to its weight, which I conjecture does not now much exceed a ton.

The beauty of the bridge is great; and though not absolutely necessary, being over a piece of water in a private pleasure-ground, it is very useful and efficient. The whole cost of materials and workmanship did but little exceed 30*l.* This account I have put together, which, it is feared, is much wanting in technical or scientific accuracy, to show how easily and cheaply foot bridges of this description may be erected; and of materials always to be had. If the posts which support the chains, the most perishable of all the parts, should in ten or fifteen years decay, so as to endanger the fabric, 10*l.* in money and three days in time would set it up again.

Upon a rough estimate, a wooden bridge of the same span would have cost from 80*l.* to 100*l.* and a high arch probably from 160*l.* to 200*l.*

ART. VI. *On the Means adopted for securing certain decayed Flooring and Partitions at Apothecaries' Hall, Dublin; and a Description of the Metallic Trusses used.* By ROBERT MALLET, Esq.

I AM induced to send you the following account of the removal of certain decayed flooring, and the method of securing what remained, at Apothecaries' Hall in this city (Dublin), from feeling that, although the work was not one of great magnitude, yet it embraced many circumstances in its detail eminently instructive, and fitted to draw forth the resources of the engineer; besides their being such as may be available in other cases under similar circumstances. Before entering into any detail of the operations, it will be necessary briefly to describe the field of work.

The Apothecaries' Hall at Dublin is a large brick building, constructed about the year 1791. It stands in line with other houses: those immediately adjoining it on either side were built previously to its erection; and, although a large and a public structure, it was what the workmen call "scamped" in the execution. It is four lofty stories in height, and has about 50 ft. of frontage, by 60 ft. in depth.

The floor on the street level is almost entirely occupied by the warehouse, which, together with the house-hall, and a small office, occupies the whole area of the building. The street floor is supported by cast-iron columns; antique pieces of work, in the form of octagons, of 7 in. in diameter, and cast solid.

From over these other columns run up, which support the surrounding gallery and the floor of the board room; which, together with the staircase and some minor rooms, form the second story from the street. Immediately above this is a bedroom floor, with various doors and separating partitions; and then the roof. I have before said that the adjoining houses were built before the one now in question; and all the advantages that could be were taken of them by the builders, to save their pockets; accordingly, there is literally not a wall in the Apothecaries' Hall but the front and rear ones, and a small portion of staircase that properly belongs to it. Both ends are formed merely by the party walls of the adjoining houses; and four very heavy stacks of chimneys are run up against these walls, two at each end, without any bond or connection whatever with them. All the floors, also, rest the greater part of their weight upon these end walls. Many of the beams run into the piers of the chimneys; and all the divisions, throughout the whole building, are formed by partitions, merely resting on the floors, without the slightest attention to the keeping of one partition over another; and on one great central partition of the upper story rests the roof; so that the whole is one vast cage, possessing scarcely any stability.

The roof is formed in two equal spans, the ridges running parallel to the street; and the abutting feet of the rafters in the middle valley, resting on the partition above alluded to; so that, in addition to their own weight, the floors support one half of the weight of the roof, besides that of the numerous partitions above alluded to.

The upper floor, that immediately over the board room, was the scene of subsequent operation. It had sunk in the centre about 8½ in.; the roof had gone down along with it; and thence acquiring a new direction, had forced out the front and rear walls, for one story down from the parapet, about 3 in. The main beam of the floor, which went into the chimney piers, had acted as a lever, and detached the chimney stacks from the end walls against which they were built; while much of the board room ceiling had fallen down.

The Incorporated Body of Apothecaries consulted several builders, &c., upon the subject, who all recommended the taking down of the entire edifice, and rebuilding it. This there were many objections to; when, at length, the board, having heard of our firm [John and Robert Mallet, Dublin] having constructed some very large metallic truss-beams for Sir Charles Coote of Ballyfin, conceived that possibly something of the sort might be applicable here, and accordingly consulted us. After having examined the circumstances of the case, we undertook to restore the floor to its original level, and the roof along with it, and

also the walls to their perpendicularity, if found advisable, without taking down or disturbing any part of the then existing edifice.

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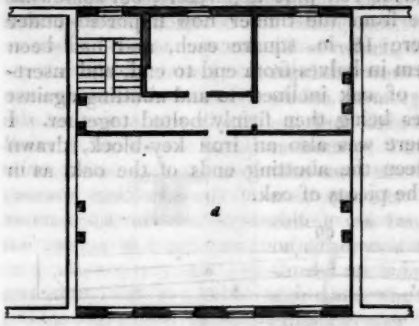

Before proceeding to describe exactly the condition of the defective floor, &c., or the operations performed on it, a sketch both of it and of the story immediately beneath it, viz., the board room floor, will be necessary, in order to give a clear idea of both.

Fig. 67. represents the board room floor, in which *d*, the board room, is 48 ft. by 30 ft. *Fig.* 68. is the bed-room floor, which had sunk 8½ in.

In these figures the walls properly belonging to the Apothecaries' Hall, and the partitions, are shaded darker than the walls of the adjoining houses.

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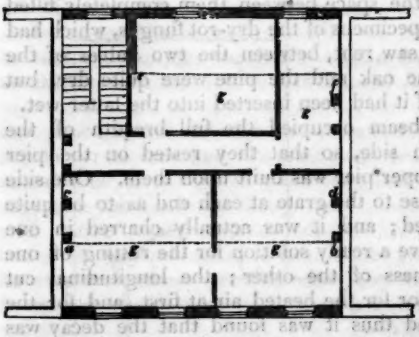

All the stories have compound flooring on the upper floor (that which had sunk); and a main trussed girder ran from *a* to *b* (*fig.* 68.); each end being inserted in the pier of a chimney. Another ran under the main partition, from *c* to *d*, which last partition was also trussed, and was that on which the roof rested. A third girder ran, in the line *e f*, from the staircase wall to the end party wall: this latter, being comparatively short, stood fast, but both the others had gone down, attended with the appearances before described.

On stripping the flooring and partitions, neither the beam *a b* nor that under the partition appeared externally decayed; but, upon boring, the former was found to have only an external shell, of about 1½ in. thick, sound all round it, while the latter was but very partially decayed in a few places. The ap-

pearances of these beams, when removed and opened, were so very instructive, that I think it worth while minutely to describe them.

The beams were both of red pine apparently, but somewhat different in appearance from the timber now imported under that name. They were 18 in. square each, and had been trussed by splitting them in halves from end to end, and inserting in each two pieces of oak inclined to and abutting against each other, both halves being then firmly bolted together. I should mention that there was also an iron key-block, drawn down by a bolt, between the abutting ends of the oak, as in *fig.* 69. where *a a* are the pieces of oak.

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It is to be remembered that one of these beams had its ends inserted in the party walls, and the other into the chimney piers: the former was comparatively sound, and the latter utterly decayed.

On opening the rotten beam after its removal, it was found to have become a mere shell, containing the pine and oak, both wholly decayed; and the space between them completely filled up by the most florid specimens of the dry-rot fungus, which had even ramified into the saw rent, between the two halves of the pine beams. Both the oak and the pine were quite dry, but the former looked as if it had been inserted into the latter wet.

The ends of this beam occupied the full breadth of the chimney pier on each side, so that they rested on the pier below, and then the upper pier was built upon them. One side of the beam was so close to the grate at each end as to be quite hot when first stripped; and it was actually charred in one place. Hence, we have a ready solution for the rotting of one beam and the soundness of the other; the longitudinal cut forming a fine conductor for the heated air at first, and for the fungus afterwards, and thus it was found that the decay was least in the centre of the beam where farthest from the sources of heat.

In the other beam the rot was usually in the neighbourhood of the bolts. Now, here are many points worth attention: first, we see the importance of keeping timbers as far from sources of artificial heat as possible, independently of all danger from ignition; secondly, we find the decay spreading from the inside, which would seem to indicate some specific action between the oak and the pine, engendering the fungus, which adhered indiscriminately to both; and, lastly, we see that longitudinal saw-

cuts, wherever it is possible, should be avoided, as forming conductors for decay.

The floor which these beams supported was of that kind called naked flooring, consisting of the girders before described, binding joists, common and ceiling joists, and flooring boards; all of which, with the foregoing exceptions, were sound. To remove the girder, forming part of the partition on which the roof rested, seemed unnecessary; but it was determined to take away the other one, viz., that at *a b*, *fig.* 68. Accordingly, all the ceiling was broached down; the floor on either side of the girder *a b* was shored up from the very bottom, and also under the main partitions. Each chimney pier was needled up, and removed from above the ends of the rotten girder, as shown in *figs.* 70. and 71. In *fig.* 70, *h* is the girder.

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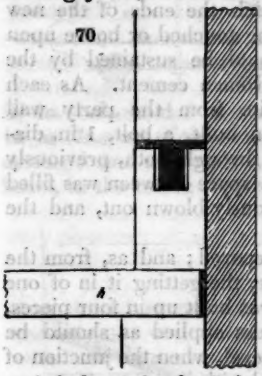
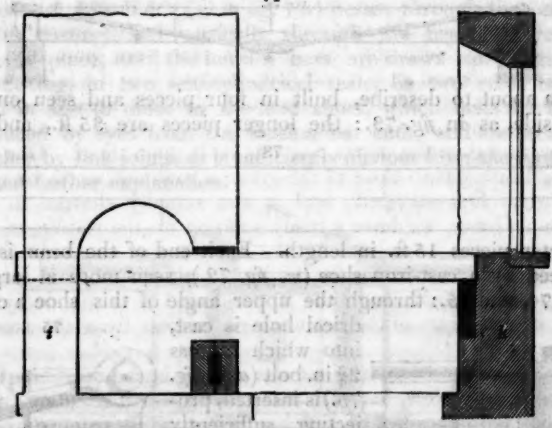


A hole, 9 in. by 7 in., was cut very carefully through the pier *i* (*fig.* 71.), and a similar one through the other pier: through both a piece of oak was put, bearing on the lower side

71



of the pier *i*, upon a piece of thick boiler plate bedded in Roman cement, and on the upper side against a similar plate, under the piers to be removed. It was then wedged up from an offset in the front wall (*k*), below the level of the leaning part; and, finally, the piers at each end of the girder were removed.

All the binding joists were next cut through, within about 3 in. of where they were notched into the sides of the girder; and, finally, the girder itself was sawn into four lengths, and removed piecemeal. The next operation was to rebuild the chimney piers that had been removed, upon two boxes or cases of cast iron, into which the ends of the new girder might be inserted, without being touched or borne upon by the masonry, while the latter should be sustained by the castings solely: this was done with Roman cement. As each chimney had parted off about 1½ in. from the party wall against which the chimneys had been built, a bolt, 1 in. diameter, with a wide washer, was passed through both, previously to the removal of the needle, and the space between was filled in with concrete, the dust being previously blown out, and the sides well wet.

The new girder was meanwhile prepared; and as, from the very unstable state of the whole house, the getting it in of one piece would have been hazardous, it was built up in four pieces, *in situ*, with such a wrought-iron truss applied as should be sufficient to bring up the floor to a level, when the junction of the binding joists should be made good with it.

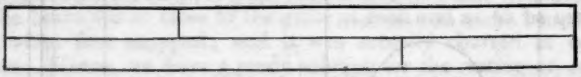
The following was the mode of trussing employed:—

Fig. 72. is a general side view of a girder trussed in the way

72

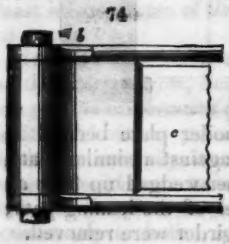
I am about to describe, built in four pieces and seen on the top side, as in *fig.* 73.: the longer pieces are 35 ft., and the

73



shorter pieces 15 ft. in length. Each end of the beam is embraced by a cast-iron shoe (*m*, *fig.* 72.), seen more at large in *figs.* 74. and 75.: through the upper angle of this shoe a cylindrical hole is cast, into which a cross 2¾ in. bolt (*a*, in *fig.* 75.) is inserted, projecting sufficiently on each side to be embraced by the eyes, at the ends of the truss or bars (which are each 1¼ in. round) on both sides. In *fig.* 74., *c* shows

74



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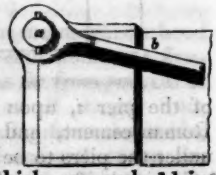

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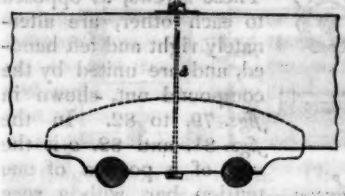

a part of the end of the beam. Another casting (*n*, in *fig.* 72.) is seen more at large in *figs.* 76, 77, and 78. In *fig.* 76., *d* shows the centre part of the beam: in *fig.* 77. the centre part of the beam, 15 in. by 15 in., is seen at *e*; *f* is the cast-iron jaw, *g* is the $2\frac{3}{4}$ in. bolt, and *h* a rim of iron 7 8ths of an inch square. In *fig.* 78. part of the bottom of the beam is shown at *i i*. This casting forms a sole plate, which lies against the bottom of the beam, in the centre of its length, and it has a cast-iron jaw (*f*, in

77

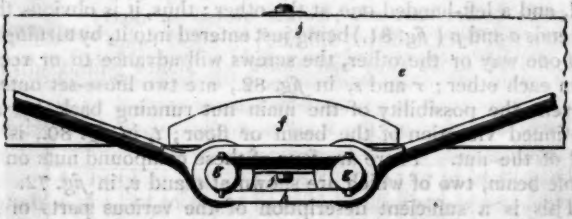
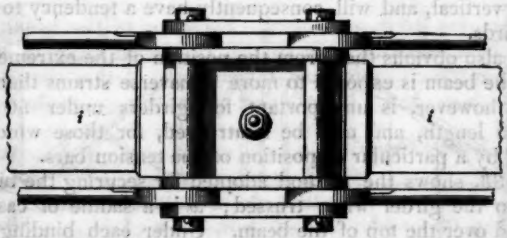
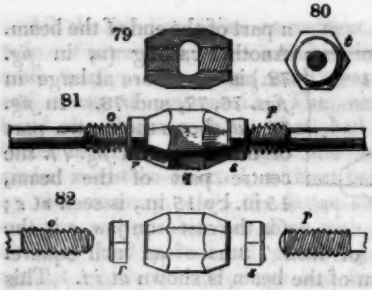


fig. 77.) on each side, serving more effectually to embrace the timber. A $\frac{3}{4}$ in. bolt (*j j*, in *fig.* 77.) passes through the centre of this casting, and vertically through the beam, to retain it in its place, until the tension bars are drawn up. Against this casting, in two semicylindrical seats, lie two cross bolts, equal in size to those in the end shoes, which bolts are both embraced by eyes from the tension bar ends, and are secured together by link joints, as is sufficiently obvious from the figures, without farther explanation.

78



It is seen from *fig.* 72. that there are two tension bars on each side of the beam, inclined to each other at an obtuse angle; and each of these consists of two lengths, each having an eye as before described at one extremity, and a screw at the other.



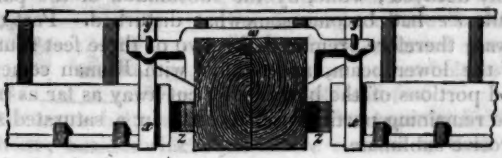
These screws, as opposed to each other, are alternately right and left handed, and are united by the compound nut, shown in *figs.* 79. to 82. In the *figs.* 81. and 82. *o* is the end of a portion of one tension bar, with a very strong right-handed screw cut upon it; *p* is a similar end of another tension bar with a left-handed screw upon it. The large nut *q* is chambered in the centre, as shown in the section (*fig.* 79.), and has a right-handed female screw at one end, and a left-handed one at the other: thus, it is obvious that, the ends *o* and *p* (*fig.* 81.) being just entered into it, by turning the nut one way or the other, the screws will advance to or recede from each other; *r* and *s*, in *fig.* 82., are two loose-set nuts, to prevent the possibility of the main nut running back by any continued vibration of the beam or floor; *t*, in *fig.* 80., is the end of the nut. There are four of these compound nuts on the whole beam, two of which are shown at *u* and *v*, in *fig.* 72.

This is a sufficient description of the various parts of the beam. Now, it is obvious, without entering minutely into the theory of its action, that, as the beam itself affords a firm resistance to the approach of the extremities of the tension bars, and as they are inclined at an angle to each salient towards the bottom of the beam, on shortening them by means of the nuts, the forces in the direction of the bars will be resolved into one, contained within their angle of inclination; that, as the strains upon all the bars are equal, the resultant will bisect this angle, and be parallel to the plane in which the bars lie; and that, therefore, when the beam is horizontal, this resultant will be vertical, and will consequently have a tendency to curve it upwards.

It is also obvious that, from the position of the extreme cross bolts, the beam is exposed to more transverse strains than one; which, however, is unimportant for girders under 50 ft. or 60 ft. in length, and may be neutralised, for those which are longer, by a particular disposition of the tension bars.

Fig. 83. shows the method adopted for securing the binding joists to the girder when trussed; *w* is a saddle of cast iron dropped over the top of the beam. Under each binding joist, a wrought-iron stirrup (*x*) is placed (as shown in the end view *fig.* 84.), which is cottered up at *y y* in *fig.* 83. When all was brought to a proper bearing, the wedges *z z* were driven between the ends of the binding joists and the sides of the girder, and

83.



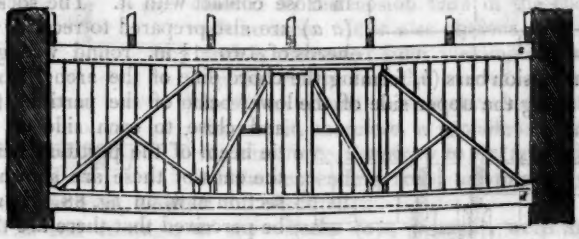
the flooring was laid down. The flooring-boards, &c., and the girder (15 in. by 15 in.), are seen in the section *fig.* 83.

84

So far for the first operation. We now come to the methods adopted for securing the main partition, &c.

Fig. 85. represents the whole partition stripped. The upper and lower beams were both trussed with oak, as before shown; the roof rested upon the upper beam (*c*); and the partition itself was trussed: notwithstanding which, the whole had sunk about three inches,

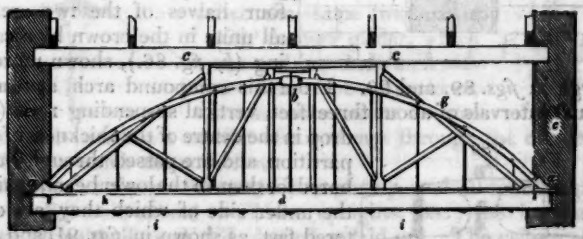
85



owing to the decay of the lower beam (*d*); and the joints of the truss had, therefore, opened in various places.

Fig. 86. shows the same partition with the wrought-iron truss (*a b*) applied to it, and brought up thereby. The studding of

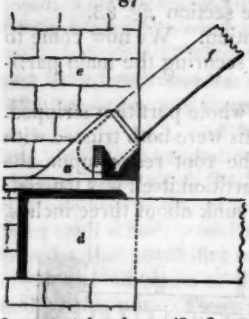
86



the partition is left out in this figure, and the truss framing alone shown, together with the wrought-iron truss, to prevent confusion. Each end of the lower beam (*d*) was built about 20 in. into the masonry of the end walls, and was found con-

siderably decayed; while, by the subsidation of the partitions, the walls *e e* had become somewhat disturbed. Part of these walls was, therefore, removed for two or three feet round each end of the lower beam, and rebuilt with Roman cement; the decayed portions of the beam being cut away as far as possible, and the remaining portions well soaked in a saturated solution of corrosive sublimate.

87



The masonry having been rebuilt up to the level of the top of the beam (*d*) at each end, a strong cast-iron compound socket (*a a*, shown more at large in *figs.* 87, 88, and 89.) was laid upon it, and the masonry was then continued up. These sockets were prepared to receive two ribs of wrought iron (*f*, in *fig.* 87.), 4 in. wide by 1 in. thick, made of common rolled bars, one of which runs in the arch *y*, at each side of the partition, and comes in close contact with it. The sockets (*a a*) are also prepared to receive the heads of two 1¼ in. round wrought-iron tension bars (*h*, forming the chord line of the arch), which lie along the upper side of the lower beam of the partition (*d*), and close to each side of the tie beam of the partition truss: the ends of these are shown in section at *h*, in *fig.* 88. It will be perceived that there are thus two complete arches, one on each side of the partition, which are united so as to form one. Each of these arches is made in two equal lengths, and the four halves of the two arches all unite in the crown by a casting (*b*, *fig.* 86.), shown more at large in *figs.* 89. and 90. From this compound arch, at nearly equal intervals of about three feet, vertical suspending rods (*i i*) drop in the centre of the thickness of the partition, and are passed through holes bored for them in the lower beam, against the under side of which they are cottered fast, as shown in *figs.* 91. and 92. The centre uniting piece (which is shown in profile in *fig.* 89. and in plan in *fig.* 90.) has a square socket for the central suspending rod, into which the

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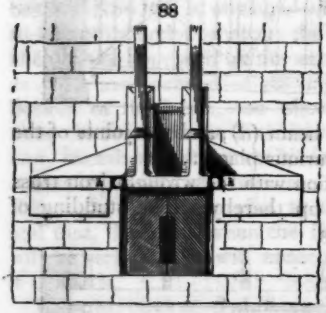


89

90

latter is cottered; all the other suspending rods are made fast to the arch by a broad strap link, passed over a cross bolt, as shown in *figs.* 93. and 94.

These cross bolts also serve to unite both arches firmly throughout; besides which, they were marked in their places, and bored, in order to be spiked to every stud and upright, &c., that they intersected, so as to have a complete grasp of the partition from end to end; but this spiking was not performed until the partition had been all brought up straight, for obvious reasons.

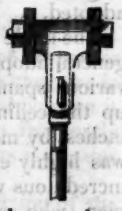
91

From this arrangement it will be perceived that the iron truss, or arch of suspension, is supported firmly at its ends in the vertical, by the solid masonry of the walls, and that all lateral thrust upon the latter is removed by the tension bars in the chord of the arch. It is also obvious that the arch is prevented from yielding sidewise by the stiffness of the trussed partition itself, to which it was abundantly sufficient; it, therefore, is capable of resisting the force necessary to be applied to all the suspending rods, to bring up the whole partition, which it did effectually.

92

The end castings, or skew backs (*a a*, *fig.* 86.), were kept about three fourths of an inch clear of the lower beam above them, and an air space was left in the masonry behind and at each side of them. I should have mentioned, that the same was done with the new girder, which was put in; and, as it was so near the fireplaces, means were taken to establish and preserve a current of air always through the cast-iron sockets in which the ends rest.

93

94

As soon as the partition was brought up, and all found right, the arches were spiked to all the uprights, &c.; the ironwork was well painted, and the plastering laid on. The ceiling also of the board room was begun; but, owing to the projection of the centre links of the trussed girder (*fig.* 78.), and of the bottom ends of the suspending rods, it was found necessary to fur down the ceiling joists about 2½ in., and also to give the

central ornament rather a greater relief than would have been ordinarily necessary; but not such as was in any degree unpleasing: these were all the alterations in the ceiling consequent upon the trusses.

When the partition was brought up, it was seen that the roof necessarily went up too; and as its subsidation had caused the front wall to lean out, there was danger that any alteration in the position of the roof might send it out entirely: it was, therefore, stitched by eight bars of $1\frac{1}{8}$ in. round iron, passing through the wall plate, and cottered over large cast-iron ornamental washers outside the wall, to the upper beam (*c c*, *fig.* 86.) of the partition; and, lest this should yield at all by bending sidewise, two bars were passed from it, dividing it into three equal segments, through the rear wall, and these were made fast in a similar way. These bars passed above and lay on the ceilings of the upper rooms. All this caused but little disturbance in the roof or covering. The floor of the back rooms, supported on the rear beam, had not sunk. This beam was much shorter than the others; and, on examination, we found that it was not trussed at all, nor decayed, although one of its ends went into a chimney pier; thus corroborating the conclusion that the oak trusses had been placed in the others wet, and that this circumstance, together with the heat, had been the cause of the decay.

The whole of the work was completed in about six weeks, and cost under 300*l.*, exclusive of the board room ceiling.

When finished, the floors were exceedingly stiff, and they have continued so ever since, without yielding in the least; it may, therefore, be pronounced that what was done was probably as good and economical a mode of procedure as could have been adopted.

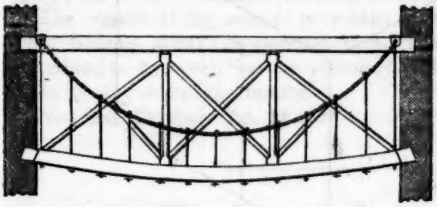
The mode of trussing girders here described I recommend for general adoption, having used it in numerous instances and for various spans, with perfect success. Not long since, we drew up the ceiling of a very large library, which had sunk some inches, by means of this mode of trussing. The ceiling, which was highly enriched, was uninjured by the operation; but, so incredulous was the architect in this case, that one of our foremen, who superintended the execution of the work, actually performed the hazardous feat, after the ceiling had been raised, of lowering it down again to its original level, and then bringing it up straight, to satisfy him that it could be done. The details of this, if you think proper, I may perhaps send you, at some future time. [We shall be most happy to receive them.]

The other truss is not so generally applicable; but I imagine, in most cases of large and heavy partitions, that they would be more economically trussed by a modification of it than by a

huge framework of timber. When the partition is very large, wrought-iron bars are unfit, and in such cases castings may be substituted; but, for moderate spans, wrought-iron flat bars possess the great advantage that they may be readily bent to any curve by being applied to a cast-iron mould when heated in a boiler-maker's oven.

Where the upper beam of a heavy trussed partition remains good and sound, but the lower one has failed, and the partition has, therefore, parted from the upper one, perhaps a suspension chain, made fast to the extremities of the upper beam with vertical rods to the lower one, would be the most economical construction, as in *fig.* 95. This mode, however, cannot be adopted when there are doors or other large openings in the partition.

95



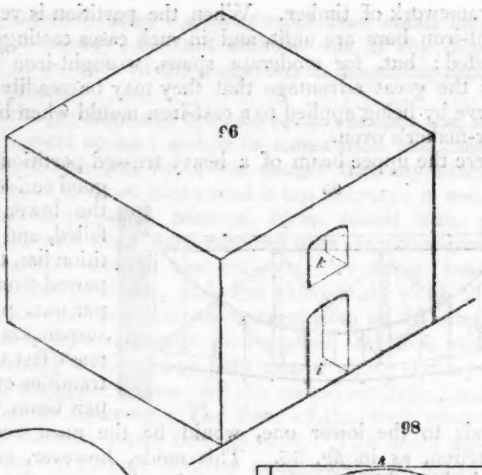
This notice is over long for the subject; but it must be remembered that practical information in detail, which is the most valuable of any to the practician, can only be given by minute and often prolix description.

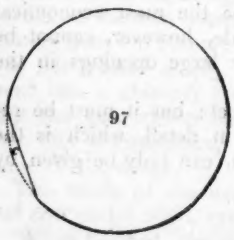
Capel Street, Dublin, 1834.

ART. VII. *A Description of an Egyptian Oven.* By MASHDOUD MOHANDEZ.

THE following is the description of a private oven, as public ovens in Egypt are not so numerous in proportion as they are in England. In villages and small towns, scarcely a public oven is to be found, except in those places which are most frequently visited by travellers, and where the influx of strangers is greater than could be well provided for by the inhabitants.

Fig. 96. represents a private oven; *fig.* 98. is a section of the same; and *fig.* 97. is the *arssa*, or oven plate: see *a*, in *fig.* 98., which represents the same plate. This plate is generally about 5 ft. in diameter, and 3 in. thick; it is made thicker at the margin, and curved inside, next to the arch *b*. The place left at *c* is for the fuel; to complete the aperture necessary for which, a part of the oven wall is also left out opposite *c*. The aperture is always on the left-hand side, and the ashes fall in the direction of the dotted line at *d*. The oven is built with bricks.





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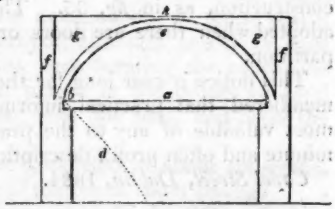


After the arssa is put in its place, as it is at *a* in *fig.* 98., and the circular arch *e* is built, then the wall *f f* may likewise be raised; when that is done, the places at *g g*, and all around the arch, are filled up with small stones, broken bricks, &c., till about 1½ in. from the top, and that is finished up to the line *h* with soil, hemp dust, and ashes, all mixed together with water, till the mixture gets hold and makes a strong cement. The mouth of the oven is *k* in *fig.* 96., and *i* is the ash-pit. The arssa, or oven-plate, is the most important part of the whole, and its composition is as follows: — The broken earthenwares, as old pots, &c., are gathered together, generally by old women, who then take a stone, about 18 in. square, and with it and a mallet reduce the earthenware to what they term *hummra*, or powder; with this they mix about one third of the *best soil*, and some hemp dust, in pieces a quarter of an inch long. These materials are mixed with water, after which the workmen take a piece of wood about 4 ft. long, 3 in. by 4 in., and rounded at one end for the hand: with this they beat the composition until it becomes tough; when so, it is fit to be worked; they then spread the ground over with ashes, and on the same make the arssa.

When this plate is fixed in the oven, and is fit for burning, it is charged first with the common fuel, viz., cotton trees, straw, &c. &c.; and after the fire gets up well, they charge the oven with animal bones until the arssa is thoroughly burnt. I have seen this done in our own house, and in several other places, but never did I know the reason why animal bones are always made use of in burning the arssa. When the arssa is thoroughly burnt, the oven is cleansed out, and is then fit for use.

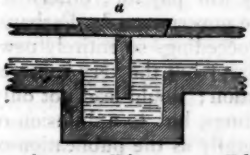
The mouth of the oven is very low, consequently the women, when baking, always sit opposite to it. This is a very unpleasant situation, as the oven has no chimney to it, and all the smoke finds its way out of the mouth.

Norwich, December 23. 1834.

ART. VIII. *Hints on the Prevention of Vermin.* By JOHN MILNE, Esq.

THE aliment of mice and rats consists of nearly equal food and water. In farmeries the first cannot be withheld, but the latter may. All drains should be made of close-jointed stone, or of bricks, with properly constructed air traps; see *fig.* 99., in which *a* is a stone which is made to lift up to clean out the earth or other matter from the trap.

99



Roof gutters, if any, should be made as inaccessible as possible; water troughs decidedly so. This is easily done. Project a wooden fillet or frame all round within the trough, making it project 3 in. or thereabouts into the trough, and keep the surface of the water about 3 in. below the frame. By this method no rat of the ordinary size can get a drop.

To prevent them from getting up into the roof; let a flag-stone be projected over each of the interior angles. No walls, especially of dry stone, should be allowed near the buildings; or, at least, to come in contact with them near the level of the walls.

James's Square, Edinburgh, January, 1835.

ART. IX. *Architectural Maxim.*

WHEN the first impression made by a building is of an undecided character, so that we feel at a loss what to say of it, the presumption is, that it is bad. There is evidently, in such a case, a want of unity of effect, and of decision of expression, which always accompany real beauty.

REVIEWS.

ART. I. *A Letter to the Right Hon. Sir Robert Peel, Bart., M.P., on the Expedience of a better System of Control over Buildings erected at the public Expense; and on the Subject of rebuilding the Houses of Parliament.* By Lieutenant-Colonel the Hon. Sir EDWARD CUST. Pamphlet, 8vo, 18 pages. London, 1835.

WITH almost every opinion expressed in this pamphlet we entirely agree; since its great object is to advocate a free competition for the authorship of designs for public buildings. We are not quite sure, indeed, that the writer of the letter would go to the extent which we think desirable; for we would not only allow all architects whatever to compete for giving a design for a public building; but, in the examination of the designs given in by a committee, we would have all their different merits or demerits discussed in public, and reported in the newspapers. The designs themselves we would have exhibited in an apartment open, at all reasonable times, to public inspection. We think the principle of entire publicity should be applied to every mode of employing the public money. The public, who pay, have surely a right to determine what they will pay for; otherwise, what is the meaning of a representative government? Perhaps, in the commencement of a line of proceedings so entirely new, some errors might be committed at first; but the very cause of those errors would lead to their correction; would lead not only to the improvement of our public buildings, but to a diffusion of knowledge, in matters of taste, as generally as the publication of the discussions in parliament has led to a diffusion of political knowledge.

Having stated thus much, we shall now allow the author of the letter to speak for himself; most heartily recommending his arguments to the consideration of our readers, and more especially to such of them as are in parliament.

"As an amateur, delighting in the pursuit of architecture beyond the other elegant arts, my attention has been long directed to the extraordinary disparity which exists between our national advance in this art and that of other countries, as displayed in the recent public buildings of London and in those of their capital cities; nor, indeed, will the comparison be improved, if it be extended to the works which have been constructed under private management both in this city and the country. I have not hesitated to raise my feeble voice, both in Parliament and out of it, against the system which has led to this result. Had my abilities been equal to my zeal, the public would have been spared all the mortification that has been experienced about Buckingham House, and perhaps might have been benefited in regard to the National Gallery.

"A rumour is in circulation that an architect has been already directed to prepare plans; that he has been, in fact, appointed to the duty of building a new House of Parliament. I hope this is not so. I will take the liberty of speaking of that eminent individual with the freedom that is permitted towards

a known public character. I do not think the selection will give satisfaction. I doubt whether the poverty of his taste is counterbalanced even by his other professional acquirements, and by the unimpeached respectability of his character. But my business is not with individuals. I object to any appointment that is not accompanied with some avowed responsibility in the party making the selection; and, further, to any appointment without some avowed control over the course of his proceeding. This has been the vice of the old system: under the Board of Works, each architect had, by an assumed right, a claim to employment over a particular district, without admitting of any interference. The Commissioners of Woods and Forests are now *supposed to have* the appointment and control, yet their responsibility on this head has not as yet been acknowledged by them, and certainly has not appeared to be of much avail over the architect in the progress of his work. No one can say that the experience of the past would justly bear out the inference, that the system under which the public buildings have been erected of late years has been a happy one. I may almost assert, that all the public buildings of the last half century have been behind the average architectural talent of their day; and this, as it appears to me, is manifestly because the employment has been consigned to professional men, whose distinction has been, in a principal degree, the reputation of a former day, and who continue to be employed rather for their experience as respectable men and practical builders, than for the popularity of their taste and abilities; men, whom the very circumstances of their position have already made mannerists, and induced to despise the altering taste of the times. It is very true that, in matters not connected with the imagination, the world is disposed to be led by the experience of a well-known name; but in matters of taste it is not necessary that we should be eternally bound to the senior of his day. The most eminent statesman of any time cannot venture to set at defiance all public opinion: but the artist who imagines himself placed above his compeers, assumes a claim to direct exclusively a mystery, which not even one of his own craft, much less an amateur or one of the public, can presume to gainsay or control. A painter or a sculptor, a merchant or a retail dealer, must condescend to suit his article to the market; but the leading architects of our times have aspired to bend the public to their fancy, and haughtily refuse any obedience to the spirit of the age. In proof of this assertion, I could point to the New Courts of Law and Buckingham Palace, as admitted and most glaring instances of the position I am stating.

"It would be ungracious to living architects (many of them individuals of the highest respectability) to enter here into a detailed criticism of their works, in order to prove the points to which I may allude in passing; nor do I desire to reflect upon the whole profession in any thing that I state. I firmly believe that there is abundance of native talent, if it were brought forward. I have the firm confidence in my own mind of the extent of our national ability in this department of art; but I would ask any travelled man who has not been farther even than France or Germany, whether, upon his return to London from Paris, Berlin, Brunswick, or Munich, the appearance of our new public buildings has satisfied him; and whether he does not feel humiliated at the idea that we should appear to be so surpassed in them, whilst he may assuredly know that we have men in the profession capable of competing with any foreign architect? The imaginary traveller, whose opinions we have of late years so often heard quoted, would doubtless conclude, from our Metropolitan architecture, that the stock-in-trade of a British architect consisted of a few columns of each of the five different orders, of which he invariably disposes about one half in the centre, and then divides the remainder between the two flanks of his building. The extent to which his imagination appears to soar is, as to the disposal of the masonry which is requisite to carry his building to a certain height; and this would appear always to be settled by some fatal rule which cramps its elevation. He sometimes will place the required mass below his columns, as at Buckingham

House; sometimes above them, as at the Board of Trade; and sometimes, with greater impartiality, it is divided half below and half above, as at the New Post Office.

"In the absence of a well-stored mind, merit is sought to be obtained by the introduction of architraves to the doors and windows, of no very striking proportion to the rest of the building, nor of any abstract beauty in themselves; but which John Bull is told he must admire, because of undoubted Grecian authority. These are to be thrust in, without much consideration of their fitness, into the very portion of the building which has been already made as fine as the slender resources of our artist can enable it to be. It is an extreme innovation amongst us to allow the cornice, either to be at the top of the elevation, or of any considerable relief, when it is placed there; so that it might be presumed that the quality of our material did not admit of any greater dimensions, or that some municipal regulation disallowed it.

"It is unnecessary to continue the criticism further; for it is admitted by every man of judgment in the art, that the universal characteristic of our recent public buildings is meagre outline and feeble invention. I have no intention, in what I have said, to speak disrespectfully of the Orders of Architecture, or of Grecian example; but to deal with the former as our artists do, is as if a poet were to toss about a few favourite words into nonsense-verses, without caring for the sense or the application: whilst the mere reference to classic authority, without a thought of the fitness or propriety of its introduction, is like an essayist who strives to make up for the poverty of his own powers by a continued imitation of the Johnsonian style. The pedant in literature and the pedant in architecture are not very dissimilar; and, although the architect should store his mind with every thing that has been considered excellent in his art, as the man of learning should with all that has been written, yet eminence will in neither case be attained but by him who can aspire to break through the trammels of the schools, and show his own generation an example of noble daring.

"The history of the late Parliamentary Buildings affords a striking illustration of the error of the system I am deprecating. It is fresh in our recollection how discreditable they were to the arts and taste of the nation. Indeed, no regret has ever been expressed at their destruction; they were universally felt to have been below contempt as works of art; and all the feeling that was excited on the subject was for the safety of Westminster Hall and the Abbey. Yet these last were the works of times reputed barbarous, and the former that of our own days, when we flatter ourselves we are so advanced in civilisation. No money was spared for their erection; as a slight reference to the parliamentary accounts for a series of years would testify, to the amazement of the public. These buildings were undertaken in the first instance by the late Mr. Wyatt, who was left, without any control, to adopt a style of his own, which he called Gothic; and it then devolved upon another architect, left alike under no superior control, to follow up the work of repair; and who, perfectly regardless of the style which his predecessor had followed, introduced a new extravaganza, which even an admirer of his taste (if there be one) cannot but feel was in direct violence to every style that reigned around it. Thus, a most incongruous group of building, alike unmeaning in design and flimsy in substance, but of absurd extravagance in cost, existed in just reproach to the arts of England, which were put to shame for a fault in a great measure owing to the system under which they had been allowed to be reared.

"Another palpable instance of the evil of an uncontrolled discretion in the architects employed on public buildings is presented in the history of the marble arch at Buckingham House. It is not my purpose to discuss whether this was judiciously placed there, nor to become in any way its advocate. Marble was brought over from Italy for its erection at a great expense; it was originally calculated for a record of our victories, by land and sea, during the late war. The most eminent sculptors of the day were employed in its

decoration. A change takes place in the architect employed at the adjoining palace; and, without any consideration of its special and distinct object, without any regard for the works of such men as Westmacott and Bailey, the relievos that were intended to illustrate Trafalgar and Waterloo are transferred to other purposes. Works of art, calculated for a given height, are raised beyond the reach of observation; and it will scarcely be credited, and is perhaps not generally known, that the most beautiful spoils of a work distinctly voted by Parliament to commemorate our glories, have been even carried away to another public building, and that the death of Nelson has been thought an appropriate decoration to the Gallery of the Fine Arts. Had any proper control existed, no such *barter and change* could have been permitted; and yet, although this has been done even before our eyes, I do not expect that any man, or body of men, will be found to whom the responsibility of such folly can attach. I will pass over the absurdity of the arch in the Green Park, erected by one architect as an entrance to a palace garden, in the rear of which his rival made an immense reservoir of water to prevent such an appropriation of it, and pass at-once to the conclusion at which I am desirous to arrive: it is one in which the public will, I believe, participate; that the architect to be employed on our public works should cease to be a personal selection, and that something of a competition, not from among the mere tyros of the profession, but from the large class of its 'very first line' should be resorted to, in order that the best talent of the day may be elicited; and that the selection and control over the architect should vest in some authority who can be held responsible for what is done, and who may prevent the abuses to which the public have been exposed on these subjects, to the loss both of our money and our reputation.

"The rebuilding of the Houses of Parliament affords an opportunity for trying the effect of a new method of proceeding. Let us first state what is the system that requires amending. The last plan adopted by the government was, I believe, to call in council a certain number of the sages of taste. The public is, I believe, still in ignorance of the method adopted in the selection of the architect. As usual, to use a vulgar phrase, 'a tub was thrown out to the whale;' and, as in the case of Buckingham House, the country was informed they were only going to enlarge an old building; so, another old building was to be patched up and altered at a trifling cost, and on the top of the scheme the minister found an architect ready to his hand, without it being known correctly at whose door the responsibility of the choice remained. I desire to allude no further to this business than is necessary to show that the vice of the old system remained up to the very last occasion on which the selection of a state architect was made. No responsible authority took the trouble to consider previously, whether the old building to be altered would answer the purpose; for no sooner was the architect 'in the saddle' than an entirely new building was found to be necessary. No responsible authority selected the architect, and if he has since been controlled in the execution of the work, it will be very satisfactory to the public to know whom it has to thank for the building now in progress. He is understood to have got the appointment by his own management, and he is believed to continue the work entirely without the control of any acknowledged supervisor. How far his work will satisfy the country, it is not the time, nor is it my present purpose, to enquire."

We pass over some paragraphs, to notice the author's proposition, which is,—

"That to a commission of five gentlemen should be intrusted the mode and extent of competition; the selection of the architect; the consideration of the style of building to be adopted, and the arrangement of all its details, leaving the business of finance to be controlled and checked by the office of Woods and Forests; a division of business not very dissimilar to that which

exists between the Commander-in-Chief and the Secretary-at-War in the government of the army."

The pamphlet concludes with the following summary of what he has been desirous to show: —

"That the architecture of our late metropolitan public buildings is inferior to that of other countries.

"That it is, in truth, behind the average national talent of the day.

"That this is entirely owing to the system which has been adopted by former governments, under which the architect has been originally named, and afterwards left without any effective superintending control or responsibility."

All that is wanting to render our public buildings what they ought to be, is the application of general principles. Let us have free competition, and public discussion, and we shall have such edifices as we ought to have. If these at first are not equal to those of other countries, it will only show that the national taste requires cultivation: and this, we are convinced, will be sooner attained by free competition than by any other mode whatever.

ART. II. *A History and Description of the late Houses of Parliament, and ancient Palatial Edifices of Westminster, &c.* By John Britton and Edward W. Brayley, No. II.

WE have commended the first number of this curious, interesting, and most beautifully executed work in p. 71.; and we have now to notice No. 2. as of equal merit. The first plate it contains is a plan of the parliamentary buildings, &c., in which the gigantic proportions of Westminster Hall (239 ft. long by 89 ft. broad) have an impressive appearance compared with the pygmy dimensions of the Law Courts and other public offices by which it is surrounded; nevertheless, grand as this building is, it is not equal in size to the exercising-house at Moscow; the dimensions of which are 502 French ft. long, by 150 ft. broad; with walls 40 ft. high, and 8 ft. thick. (*Encyc. of Cott. Arch.*, p. 970.) The other plates are, a ruined wall with three windows, formerly those of the Court of Requests; the east end of St. Stephen's Chapel; and the vestibule at the west end of it. The letterpress extends from p. 33. to p. 64.

ART. III. *Winkles's Illustrations of the Cathedral Church of Salisbury, &c.* The Description by Thomas Moule, Author of "An Essay on Roman Villas." Nos. I. and II. 4to. London, 1835. 1*s.* each. To be continued monthly.

THIS is one of those extraordinarily cheap and beautifully executed publications which may be described as characteristic

of the present age of British literature. The letterpress is by an author already distinguished for a classical work; and the engravings on steel are by artists who, in the numbers before us, have proved themselves fully adequate to execute this description of art in the best manner.

No. 1. contains, as a vignette title, the entrance to the Chapter House of Salisbury Cathedral, drawn by H. Winkles, and engraved by B. Winkles; a south-east view of the cathedral, drawn by J. Archer, and engraved by H. Winkles; and a view from the south to the north transept of the cathedral, by the same artists. The softness and beauty of these engravings merit every praise. There are eight pages of letterpress devoted to the history of the cathedral.

No. 2. contains a view of the west front of the cathedral, by the same engraver, after a drawing by Hablat Browne; the interior of the Lady Chapel, drawn by H. Winkles, and engraved by Turnbull; and a view of the north front of the cathedral, drawn by Browne, and engraved by H. Winkles. The letterpress is eight pages, in continuation of the description.

The extraordinary cheapness and superior execution of this work will, we trust, secure it an extensive sale. At first view we thought it might interfere with Britton's *Cathedrals;* but, as the engravings in the latter work are on a larger scale, and are drawn with the greatest accuracy, they are calculated to be of more use to the architect. The work before us addresses itself to the general reader and amateur more than to the professional man.

ART. IV. *Billington's Architectural Director.* Parts X. and XI. *5s.*

THESE parts conclude the work. They contain one folding, and no fewer than seventeen 8vo plates! so that, whatever may be the merit of the work in other respects, it is at all events abundantly cheap. Cheap as it is, however, we can by no means recommend it as likely to be of much use either to the practical man or to the amateur. It may give a very accurate knowledge of the technical details of the five orders, but that is all that we can say in its favour.

ART. V. *Designs for Mural Monuments, Monumental Tombs, and Chimney-Pieces, with useful Details, to a large Scale.* By T. Faulkner, Architect, Author of "The Organ Builder's Assistant;" "Select Designs for Churches;" and "Designs for Shop Fronts." 4to. 5. Yardley Street, Wilmington Square, London; 1835.

THE first plate is a monumental tomb, the lower member of which is a plinth, next a torus, and then a fillet, above which is a

broader fillet or band with angular ornaments, which complete the first or lowest part of the whole. The centre or main body is a tapering pedestal, with a sunk panel; and this is surmounted by a sort of cornice, above which is a pediment. The second plate is a very artist-like design for a chimney-piece. The third is a chimney-piece in the Gothic style, very elaborately ornamented. The fourth is a Gothic funeral monument, consisting of two side-pieces, with a niche and pedestal for a statue between. The engravings are to a large scale, very distinct, and likely to be useful to workmen. There is no letterpress.

ART. VI. *Engravings.*

1. *VIEW of the Great Saloon in the Pantheon from the North Gallery.* Drawn and etched by Thos. Kearman, 17. Euston Place. London, Bielefeld. — This is a very beautiful view, and fully justifies our remark in p. 3. We could almost wish that a view from the south gallery were published, in further confirmation of what we have there stated. The principal object in publishing this engraving is to show the effect of the figures and enrichments, which were all modelled and executed in *papier mâché* by Mr. Chas. F. Bielefeld, 16. New Road.

2. *Sketch of the South Window of Westminster Hall, with the Ruins of the House of Lords, &c., as they appeared on Nov.* 1. 1834. Drawn and lithographed by Jas. Deason. London. Weale. — These ruins have called forth almost innumerable sketches and views; and in that respect the fire has been of service to the artists and the lithographers. We hope it may ultimately be so to architects and to the public taste. The view before us, by Mr. Deason, is one of the most tasteful and artist-like which has been produced. There is not the slightest appearance of labour in it, no masses of shade to conceal bad drawing, or to lessen labour; but the details of every part are beautifully and accurately made out, and there is not a touch given which does not tell. There are a number of figures, chiefly workmen employed, and also two horses and a dog; and, without showing the individual features of any of these, or at all obtruding them on the attention, so as to interfere with the general expression of the whole, the effect given to each figure even to the dog, is quite astonishing. Altogether it is a very clever sketch.

3. *View of the Remains of St. Stephen's Chapel, on the Morning after the Fire of the 16th of October*, 1834, *taken from the Roof of the Speaker's Gallery.* By John Taylor, junior, architect, and drawn on stone by A. Picken. Dedicated by special command to His Majesty. London: published by John Taylor, junior.—This is a highly finished drawing, and is of considerable

size. It does the greatest credit to the young artist, who is the son of a highly respectable architect, many years established in Westminster. It is one of the best views of these ruins, for being framed, which we have yet seen. The lithography is also by a young and highly deserving artist, of extraordinary talent.

ART. VII. *Literary Notices.*

THE History and Antiquities of the Castle at Coningsburgh, in the County of York. By Henry F. Lockwood and Adolphus H. Cates, architects, is in preparation. — This interesting relic of feudal grandeur, the chosen scene of a considerable portion of Sir Walter Scott's romance of Ivanhoe, and intended subject for the display of that illustrious author's antiquarian talent, has been selected for the continuation of the work on Ancient Military Architecture, as one of the most perfect specimens of Anglo-Norman art this country can afford. To give still greater attraction to a publication on this noble remain, the most extensive excavations have been undertaken, which have led to a full developement of the original manner of effecting an entrance into the keep, showing the former appropriation of the supposed dungeon, and the arrangement of the numerous buildings which once existed around the court yard. The various discoveries, the beautiful site, the form and details of this singular edifice, and of the British earthworks on which it is established, will be fully illustrated by a series of etchings, nine inches by seven and a half inches, on copper, from original drawings, accompanied by plans, an architectural description, and a historical account, chronologically arranged from the earliest period.

The Arboretum Britannicum, of which we give a specimen in the present Number, though chiefly calculated for gardeners and landed proprietors, is yet a work that will be of the greatest use to the architect. To such as practise in the country, or as put landscape scenery to their finished drawings, it will be of very great value. But as it is now becoming general for architects in the country to combine the practice of landscape-gardening with that of designing buildings, the *Arboretum Britannicum*, to such architects, may be considered as essential as an elementary work on architecture; trees to a landscape-gardener being what the five orders are to the classical architect. To one feature in this work, not to be found in any other, we beg to call particular attention: it is, that all the trees are drawn to one and the same scale of a quarter of an inch to a foot; and all from specimens of the same number of years' growth (ten years), in the same climate, and in the same soil (all the drawings being taken from trees now growing in gardens within ten miles of London). By this means

an architect or an amateur who knows very little of trees may recognise by a single glance the comparative rapidity of growth of different species. He may see not only the height which they attain in a given period, but their bulk, and general shape; and if he does not know one tree from another botanically, he has only to notice the botanical specimens, which are given along with the portrait of each tree to be able to distinguish them. These specimens are also to one and the same scale; namely, two inches to a foot, and they are not merely confined to specimens in flower, but include specimens in fruit and in seed. When the flower or seed is less than an inch across, a single flower or seed is given, in addition, of the natural size. Deciduous trees have a specimen of the spray as it appears in winter. To landscape-painters, and all who draw from nature, the work will be of much use. We trust that in a few years it will dispel the general ignorance that now prevails among almost every class, except botanists, of the foreign trees and shrubs which might be introduced into our pleasure-grounds. The work will be completed in 24 monthly numbers; and, to the young artist who wishes to study trees botanically as well as pictorially, we would recommend the partially coloured copies.

MISCELLANEOUS INTELLIGENCE.

Art. I. *General Notices.*

The long Duration of the Norman Architecture is to be ascribed to two causes; the narrow dimensions of the buildings themselves, and the perpendicular pressure of the semicircular arch. But the pointed arch universally, and especially the broad flat arch of Henry VIII.'s time, has a strong lateral pressure, and, being sustained on slender columns, has a perpetual tendency to throw them and the adjoining walls, in one direction or other, out of the perpendicular. It was for this reason that the pointed arch introduced buttresses, the projection of which gradually increased as the arch became more obtuse. It is to this cause, almost exclusively, that the decay of so many churches and chapels of that period, which have failed within my recollection, is to be ascribed. And of those which were enlarged at the same time from the old Norman structures, I will venture to predict, that, if left to themselves, the remains of the original building will long outlast the additions. (*Whitaker's Hist. of Craven*, p. 432.)

The Italian Mode of excluding the Common House Fly (*Musca domestica* L.) *from Apartments.*—This mode was pointed out to William Spence, Esq., in Italy, two or three years ago, and is published in the first number of the *Trans. of the Entomological Society*, and his son has subsequently discovered that it was known in the time of Herodotus, and practised by the fishermen of Egypt. It is simply to cover the openings of the windows by a net of white or light-coloured thread. It is remarkable that the meshes of this net may be an inch or more in diameter, so that there is actually no physical obstacle presented to the entrance of the flies even with expanded wings. The flies seem to be deterred from entering from some inexplicable dread of venturing within the network. It is even found that "if small nails be fixed all round

the window frame, at the distance of about an inch from each other, and threads be then stretched across both vertically and horizontally, the apparatus will be equally effectual in excluding the flies." It is essential, however, that "the light should enter the room on one side of it only; for if there be a thorough light, either from an opposite or side window, the flies pass through the net without scruple." (*Trans. Ent. Soc.*, i. 4.)

The above facts are of interest both to the occupiers of houses and shops in temperate climates, and the architects of houses for warm countries. They also supply useful hints to butchers, and, indeed, to all persons to whom flies and gnats are an annoyance. The facts further show, that sciences apparently the most remote from architecture may yet afford useful hints for improving that art. — *Cond.*

The Wring Duke is an instrument for wringing cloth, used by the bleachers of fine linen in Holland previously to the year 1751, being described in the *Gent. Mag.* for that year, vol. xxi. p. 196. Its mode of action is the same as that of the wringing machine, described in your *Encyc. of Cott. Arch.* § 2075. The fine linen, in both cases, is put into a bag of coarse cloth, that it may not receive damage from the twisting. The writer of the account in the magazine adds the following remark :—"Another method of getting the wet out of linen, used by our whitsters (bleachers), is to pass the wet pieces between two rollers." This is the principle of your washing machine (fig. 1262. § 1381.) in the same encyclopædia. If the above coincidences show that the machines are not new, they also prove the practicability of their use; for, assuredly, if they had not proved profitable to the "bleachers of fine linen in Holland," and the "whitsters in England," they would not have been used by them. — *T. W.*

Art. II. *Foreign Notices.*

GERMANY.

Berlin, Feb. 14. 1835. — Prince William's palace, which is at present building, has been constructed on a plan made by a very skilful architect, M. Langhaus, son of the gentleman whom genius inspired with the idea of imitating the propylæa of Athens, when he built the famous Brandenburg Gate. M. Langhaus the younger is well known as the architect of the exchange at Breslau, which is considered as one of the handsomest buildings in the province of Silesia. It was a difficult task to build, on a spot circumscribed by the large buildings contiguous to it, a palace which would afford room for so magnificent a household as that of Prince William will be, when he is to take up his residence in his new house. According to a rumour circulating in this place, it was chiefly owing to the attachment of the princess to the particular spot on which the palace has been built, and on which stood the house which served as a temporary residence to their royal highnesses. By extending the front of the building to that of the royal library, viz., to the same line, two of the finest and most elegant rooms of the latter have been rendered so dark, that they may be looked upon as perfectly useless, and the great bulk of the library, which, as you know, may be ranked amongst the most magnificent buildings of the age of Frederick the Great, contributed towards making the prince's palace appear as rather mean and insignificant, however large the building may be of itself. The king having presented to his son, the prince, the palace inhabited by the late minister of the interior, Baron Schuckmann, close by the royal library, but facing the next street, the prince has been enabled to effect a junction with this edifice, and thereby to enlarge his fabric. It will no doubt become one of the largest palaces in Berlin, but exceedingly compact and close, as it is surrounded on all sides by heavy masses of buildings.

The new academy for architecture, &c., built by M. Shinckel on the site of the old custom-house, resembles more a sugar refinery than a building destined for the reception of pupils who are to take it for a model. It is a perfect square, built of raw bricks, and ornamented in the way of the large Florentine and Venetian palaces. The views from it will be beautiful, as it commands the river; but the contrast it forms with the neighbouring buildings, which are all plastered and painted, is by no means favourable to the impression it produces at first sight. I have not yet been admitted to see the interior, but shall send you a description as soon as this shall have been the case. The ground floor is to be entirely occupied by shopkeepers; and large vaults, magazines, cellars, &c., will afford room enough for housing merchandize.

Four new churches, for the use of the suburbs, have been built, also on M. Shinckel's plans: they look, however, more like antique temples than like Christian churches, as the king has not allowed steeples to be built upon them, which would have been the more desirable, as Berlin cannot boast of many. The interior of these churches has been fitted up in a very tasteful manner; they look very comfortable, and seem to be roomy enough to accommodate large congregations. All these churches are to be opened, as I understand, on the 3d of August, that being the birthday of our excellent monarch. The expenses are borne by the king himself out of his privy purse, so that the country has not been laid under any contribution whatsoever. — *J. H.*

In the Glyptothek, or sculpture gallery, at Munich, the rooms form a single range round the four sides of the inner court; and, independently of the works of art which each room contains, the walls are ornamented with sculptures, as far as possible in the particular character of these treasures. (*For. Quar. Rev.*, July, 1834.)

In the Pinacothek, or picture gallery, at Munich, the walls are to be hung with crimson or green watered damask, and the ceilings, which are all coved, profusely enriched with stucco work. There is to be a dado on the lower part of the walls of greyish marble, which will prevent any of the pictures from being hung within 3 or 4 ft. of the flooring. (*Ibid.*)

AMERICA.

Philadelphia, May 11. 1834. — Your *Architectural Magazine* will, I trust, render this country an essential service, by promoting the knowledge and taste for a science which has been but very little attended to out of our large cities. You express a wish for specimens of American architecture, but as we have nothing elegant except the buildings in Hulton's *Views in the United States*, I cannot promise you any, unless you would accept of one or two of our commodious barns; the number of which, in the well cultivated districts of Pennsylvania, strike the foreign traveller with some surprise. In the American edition of Willich's *Domestic Encyclopædia*, published in 1806, article Farmyard, you may see two plans of American barns, one of which was built and designed by Mr. West of Delaware co. (not Philadelphia co., as in the *Complete Grazier*), to whom the agriculture of Pennsylvania is under immense obligations for the improvements in it made and practised by him. He was brother to Benjamin West the painter. Other details of barns are given, which may be usefully adopted. — *J. M.*

Art. III. *Domestic Notices.*

ENGLAND.

Surgeons' College, Lincoln's Inn Fields. — The new front of this building is now progressing, being so far advanced that we can perceive the architect's intentions. To say that this refabrication will be greatly better than the original front is no very great praise, for that was as wretched a piece of design, if

design it could be called, as was to be met with in the whole metropolis. The portico, and the house against which it was placed, did not present one idea in common; it always put us in mind of tying the living to the dead; exhibiting, as it did, the tamest cockney architecture brought into ridiculous and barbarous juxtaposition with one of the severest specimens of the Grecian Ionic. The glaring improprieties which disfigured it, as if intended to burlesque the *soi-disant* modern antique, will be now expunged; yet whether we shall be able to add any thing to this praise is exceedingly questionable. The windows on each side of the portico are not left absolutely naked, yet their mouldings are so exceedingly meagre, that they hardly show themselves at all. Richness in these parts was hardly admissible here; yet boldness was certainly desirable, in order to correspond with the character of the columns. Little danger was there that the portico would lose any of its importance by other parts being rendered somewhat conspicuous; but there is danger now that it will so far preponderate in effect over the rest, as to divide the whole into three distinct wholes, save that there will be no entrances except within the portico, and therefore we must suppose that the three form one building within. Yet it is not enough to know, we ought also to feel, that such is the case; the same sentiment of style being imparted to the whole. Whether the architect intends to add a pediment to the portico remains to be seen. We hope he will; for an advanced row of columns before a building, especially in the centre, has otherwise a rather awkward appearance, and does not look as if sufficiently connected with the part behind it.—*A Correspondent. London, Feb.* 1835.

Art. IV. *Retrospective Criticism.*

Mr. Barlow's Pamphlet on the Strength of Materials. — In the review of this work, p. 83., your correspondent has fallen into an error in supposing practical men are without the means of knowing the strength of a story post, &c. The truth is, we are ignorant of the minimum, and therefore insert the maximum. We know from practice they are strong enough, but we cannot say confidently that they are too strong. The rules now extant are useful in determining the relative proportion of the different parts of a building, but great latitude must always be taken for the quality of the materials: a knot or shake in timber, or a concealed flaw or cold shut in iron, will cause a failure when in other respects every precaution had been taken. Not having Mr. Barlow's paper, I cannot follow the subject farther. I hope we shall shortly see such improvements in brickmaking as to produce a better substitute for story posts in many cases. This brings me to the old subject of the tax upon bricks. I hope you will excite your readers to petition for its repeal. After reading Mr. Aikin's lecture on pottery in the *Trans. of the Society of Arts*, every one must be convinced that no reduction of price can be attained by the use of machinery; it is therefore to the "Repale" we look for relief. Nothing bears harder on the building profession, and nothing tends more to retard general improvement, and the employment of the working classes.—*W. Thorold. Norwich, Feb.* 16. 1835.

Art. V. *Queries and Answers.*

The Construction of Roman Walls. — "As the Romans carried their rampart upwards, they took off the pressure from the parts below, and gave a greater strength to the whole, by turning little arches in their work, and fixing the rest of the wall upon them. The holes at Sarum were all regular arches, at the distance of 5 or 6 ft. from each other." (*Whitaker's Hist. of Manches-*

ter, vol. i. p. 49.) I cannot understand the above passage. How holes in a wall, or arches through it, can take off the pressure from the parts below, and give a greater strength to the whole, I cannot conceive. The only effect that arches would have, that I can see, is that of throwing more weight on some parts than on others; and how this can contribute to the strength of the whole, I am quite at a loss to understand. Perhaps you, or some of your readers, can throw some light on the subject.—*Juvenis. London, Jan.* 15. 1835.

Art. VI. *Hints and Suggestions.*

Dissenters' Places of Worship.—I take the liberty of suggesting the propriety of giving, in an early Number of your *Arch. Mag.*, some plans and elevations of buildings suitable for dissenters' places of worship. By doing so you would render an important service to a meritorious portion of society, and render your valuable publication, if possible, still more practically useful than it already is. Among the various particulars to be considered in the constructing of buildings of this description, I would beg leave to submit the two following: — First, that the pulpit should be placed in a recess, not too deep, but sufficiently wide, and constructed upon scientific principles, so as to render the speaker's voice more audible to his congregation, and to enable him to preach with much greater ease to himself than he can according to the plan at present generally adopted; and, secondly, that the organ should be differently situated to what it now is. The organ is now generally placed in a conspicuous situation, where sight is more consulted than sound, as if gilded wood in imitation of pipes were of more consequence than fine tone and power. Could not the organ be so concealed under or on each side of the pulpit, and so enclosed, as to be made capable of being *swelled entire* into the chapel? The orchestra, of course, in this case, would be in front of the pulpit, and near the organ, and as the better part of music ascends, the psalmody by this means would be improved. — *A Subscriber. Rochdale, Feb.* 7. 1835.

Practical Carpentry.— A correspondent suggests, that a good mode of giving amateurs and occupiers of houses a knowledge of the details of building would be, to give from time to time working plans of particular parts of buildings, pointing out their uses, the origin and meaning of their ornaments, the principle of their construction, &c. He mentions internal and external doors, flooring, roofing, framing, and connecting timber for partitions, &c.; and he says, "let the writer of the articles imagine that he is instructing one who is ignorant of carpentry."

This suggestion is sent us by a correspondent, who says that he is now a common porter in Bond Street, London; that he was brought up to the business of a carpenter in the country, and that he wishes to get away from an employment that he utterly detests. He has sent a view of a table brought from India by Dr. Horsfield, which will appear in a future Number. His signature is *J. P. Old Bond Street, Nov.* 25. 1834.

Designs for Private Houses.—We take this opportunity of suggesting to professional readers the idea of sending us designs for private houses, both for streets, the suburbs of towns, and country places, which would cost from 500*l.* to 5000*l.* building. The designs should be most elaborately studied in every point of view, even to the adaptation of the furniture. Plans, elevations, sections, perspective views, and all the details, ought to be given, together with specifications and estimates, like those in our *Encyc. of Cottage, Farm, and Villa Architecture*. We recommend particular attention to the mode of heating the entrance lobbies, halls, and passages by flues, and to the fittings-up and furniture. Fenders and fireplaces we have never yet seen, in any house, architecturally adjusted to the chimney-piece and to each other.